Crisis Leadership

What Lies Ahead
by the Under Secretary of Defense (AT&L)

Risky Business
Why DoD Needs a New Risk Management Paradigm

A Reliability Approach
to Risk Assessment and Analysis of Alternatives

CONTENTS

ALSO

What Lies Ahead

Frank Kendall

I usually write about acquisition policy and best practices, but given our current circumstances I felt I should provide you with some thoughts on the highly unusual and unfortunate budget situation we face.

I want to begin by thanking everyone who works in defense acquisition, technology, and logistics for all the hard work, dedication, professionalism, and, increasingly, the patience and fortitude that you display. This includes our military personnel and government employees and also our industry partners. We provide our warfighters with the best equipment in the world, and we sustain and support that equipment so our warfighters know they can count on it when they need it. We all know we aren't perfect—there is room to be more efficient, and all of us can learn from our experiences, education, and training and become more capable. Nonetheless, all of us work hard every day to provide capability to our warfighters and value to the American taxpayers who provide us with the resources for which we are stewards.

In the next few months and possibly years, our work ethic, dedication, and professionalism, and, yes, our patience and fortitude are going to be needed. I started my military career in 1966 as an ROTC cadet. A year later I entered West Point and, while I didn't serve in Vietnam, I did serve during the turmoil of the Vietnam era and in the aftermath. Later I served in the Pentagon during the final years of the Cold War as the Goldwater-Nichols Act was being implemented. I was in the Pentagon for the first few years of the transition after the fall of the Berlin Wall. After that, I experienced the defense drawdown of the 1990s from industry's perspective. In all my experience, I have never seen a situation like the one we are trying to cope with today. After Vietnam, and again after the Cold War, the Department of Defense went through a period of transition that included major changes in defense budgets and force composition. But today we are confronted with the most difficult defense planning and management situation I ever have seen.

What makes this environment so difficult in part is the uncertainty and the lack of stability in our budgets and, therefore, in our planning activities. Defense is a cyclical business—budgets do not follow a

straight line but generally correlate to perceptions of national security needs. Today we are looking at sharp reductions in our budgets—not because threats to our national security are diminished (in fact, the opposite is true) but because of concerns about annual deficit levels and the size of the national debt, and the resulting political gridlock about how to address these issues. The sequestration mechanism was put in place to try to force Congress out of this gridlock and to obtain a $1.2 trillion reduction in projected deficits. Former Deputy Secretary of Defense Bill Lynn said before he left the department that "the idea of sequestration was to be so crazy nobody would ever let it happen, and they did a really good job." Not good enough, apparently.

Like most people in the national security community, I did not expect sequestration to be implemented in January 2013. Technically, I was right—it was deferred a few months. But, in the larger sense, I was wrong. I won't belabor this, but after the tax bill passed in January it was clear that Congress would not reach an agreement to avert sequestration permanently before it went into affect.

During the long period leading up to sequestration, the administration and the leadership of the department, military and civilian, argued against sequestration and its devastating impact on our military. That impact is real, and everyone working in any aspect of defense acquisition reading this article knows this. Sequestration never was going to arrive with the sound of trumpets and stacks of contract termination notices and reduction-in-force announcements; it comes more like a steady rain that doesn't stop rather than like a hurricane. But the water keeps rising. Every week we compile a list of the actions being taken to absorb the cuts. Individually, they are not dramatic: training not conducted, buildings not furnished or repaired, maintenance on equipment deferred. The cuts are distributed all across the department, and there are thousands of them. In FY2013, the sequestration mechanism gave us no choice about where to absorb the nearly $40 billion of spending we have to eliminate. I refer to what we are doing now as "damage limitation." We don't have the flexibility to do much else.

We are using reprogramming requests to address our greatest readiness needs and some high-priority investment needs, but serious shortfalls will remain. Many of the things we are doing amount to a decrease in our productivity (stretched-out development programs, reduced economic production quantities) and work deferred into future budgets. Probably worst of all is the impact sequestration will have on the readiness of the force, now and into the future. As a former Army officer who lived the readiness crisis of the 1970s in a combat arms unit in West Germany, I understand the fragility of readiness and what it takes to recover once people and equipment have lost their edge.
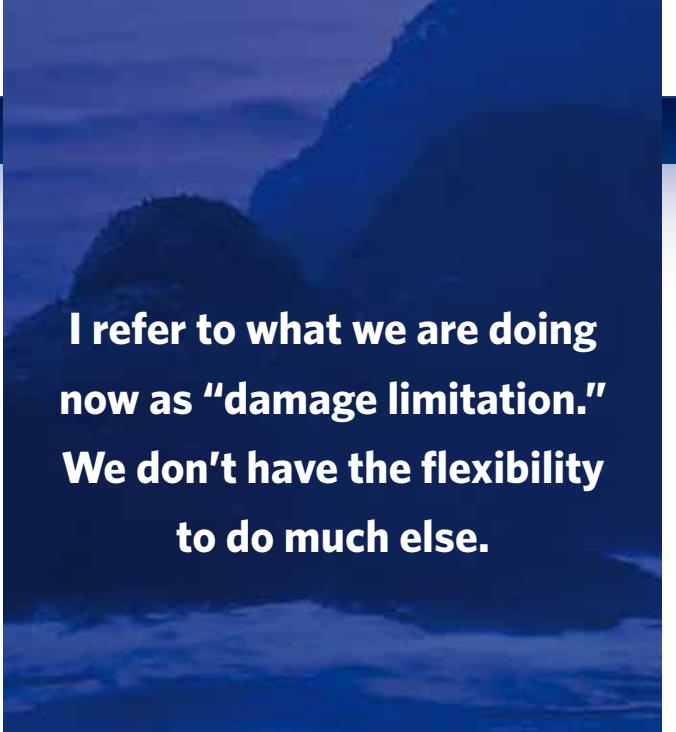
> ## I refer to what we are doing now as "damage limitation." We don't have the flexibility to do much else.

As I write, we also are on the path to implementing furloughs that will make almost $2 billion available for our highest-priority remaining shortfalls. I want you to know that Secretary Chuck Hagel worked very hard to find a way to avoid taking this step. In the end, he felt he had no choice, and he made the difficult decision to proceed with as minimal a level of furloughs as possible. We know how difficult this will be for our workforce, particularly those in the lower pay scales. Senate-confirmed political appointees like me are not legally subject to furloughs, but many (if not all) of us, including me, will be sacrificing an equivalent share of our pay. The department's leadership will continue to look for ways to reduce this burden.

What will happen next? Our hope, and the administration's goal, is a political compromise that will resolve the impasse in the Congress and detrigger sequestration. The next forcing function for such a deal might be the requirement to raise the debt ceiling that Congress will confront in the late summer or early fall. Even if an agreement can be reached, that will be very late to impact FY2013 spending. I'm afraid there is a good chance that the debt ceiling issue will be resolved without a grand bargain that allows Congress to remove the remaining 9 years of sequestration ($50 billion a year). As a result, sequestration may stay in place as the default mechanism determining the level of our resources.

As I write, the department is nearing the conclusion of the Strategic Choices Management Review that Secretary Hagel directed Deputy Secretary Ashton Carter and Gen. Martin Dempsey to lead. This review is assessing the implications of significantly reduced budgets for the department. The current budget options on the table include the House of Representatives' budget resolution that does not cut defense, the Senate Budget Resolution that removes about $250 billion (mostly outside the Five Year Defense Plan [FYDP]), and the President's Budget Submission, which removes about $150 billion

(also mostly outside the FYDP). Sequestration of course removes $50 billion per year, starting immediately. Under the circumstances, it is only prudent to assess the implications of significant reductions. The FY2014 budget that the president submitted is consistent with the Security Strategy that we announced in 2012 and provides for the resources the administration believes are needed for national security.

The frightening scenario that may confront us looks like this: Congress remains gridlocked and the uncertainty about future budgets continues at least through FY2014. We start FY2014 under a Continuing Resolution (CR) that funds the department at the FY2013 level. The funds we now are executing in FY2013 already include cuts to the levels required by sequestration, and that is the level we would receive under a CR. In effect, sequester already would be built into an FY2014 CR. Under a CR, the department still would be constrained to keep funds in the same budget accounts, but not as constrained as we were this year where essentially each budget line had to take the same reduction. In this scenario, Congress does not have to determine where the cuts occur; it can leave that politically painful task to the sequestration mechanism and the department. If past experience is any guide, Congress also may not allow the department to take some of the steps (such as Base Realignment and Closure [BRAC] and early ship retirements) it needs to take to eliminate low value added or unneeded expenses.

Kendall Kicks Off Better Buying Power 2.0

Better Buying Power 2.0 got its official kickoff April 25 at the Defense Acquisition University's Howell Auditorium at Fort Belvoir, Va. Under Secretary of Defense for Acquisition, Technology and Logistics Frank Kendall reviewed the approaches detailed in a memorandum and guidance sent the previous day to secretaries of the Military Departments and other Defense Department officials.

Kendall said there had been progress through BBP to maximize effective use of existing funds, but "we can do better. . . . In a time of shrinking budgets, we must try to do more with less."

Kendall said, "What we are talking about is a culture change." In the past, agencies worked "to protect the budget, spend, and get contracts awarded." Now, he said, there must be robust "stewardship and value for money." He said "should cost" is "catching on," and that the department needs to work harder to eliminate redundancy.

Under BBP 2.0, Kendall explained, "We are continuing our efforts in the following seven areas to achieve greater efficiency and productivity in defense spending:

- "Achieve affordable programs.
- "Control costs throughout the product life cycle.
- "Incentivize productivity and innovation in industry and government.
- "Eliminate unproductive processes and bureaucracy.
- "Promote effective competition.
- "Improve tradecraft in acquisition of services.
- "And improve the professionalism of the total acquisition workforce."

Following his remarks, Kendall answered questions from the overflow audience in the auditorium.

Coming up: *Defense AT&L* magazine is preparing a coming issue focused on the department's new initiative, in addition to our regular, ongoing coverage of this enduring effort.
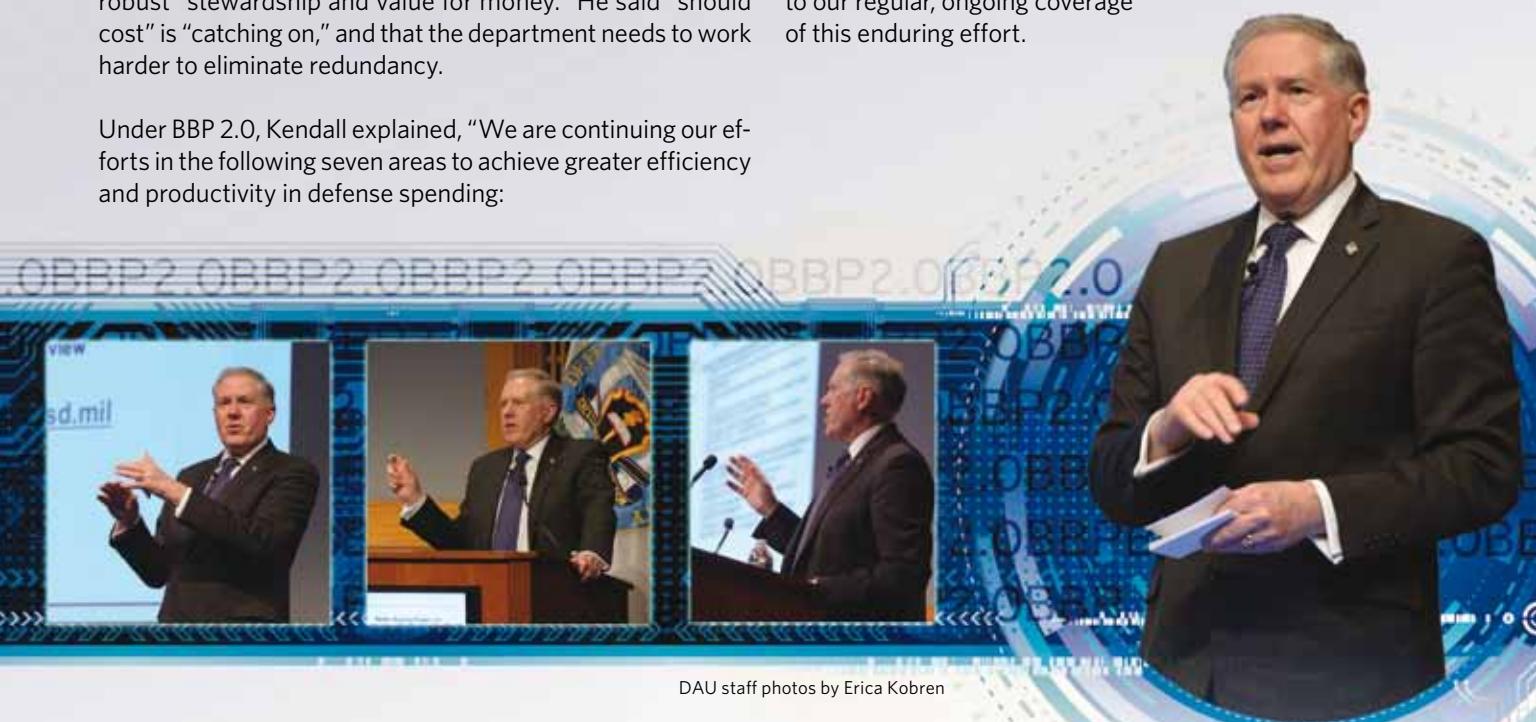
DAU staff photos by Erica Kobren

I think this is the worst-case scenario the acquisition community needs to be prepared to manage through, until we know more or receive other guidance. Will furloughs be necessary under this scenario? I don't know. I can promise that the department's leadership will do whatever it can to avoid them. Under this scenario, we still will not know what the department's ultimate budget levels will be. This uncertainty will make long-term planning all but impossible. We will have our share of challenges in defense acquisition.

In normal times, the resources are balanced by the department's budget among force structure (the size and composition of the force), readiness (training and maintenance), and investment (research and production of equipment to modernize and recapitalize the force structure). Each of these major spending categories depends on the other; a healthy Department of Defense keeps them in balance. When that balance is skewed for any length of time, the result is a "hollow force," such as the one I experienced in the 1970s when readiness was underfunded for a period of years. In addition to not knowing what size force to design the department around and resource, the precipitous cuts required by sequestration compound the problem. Force structure cannot be reduced overnight; it takes time to bring the force down. Because of that fact, immediate cuts fall on other parts of the budget—readiness or investment. Today we are at war,

and the readiness of our deployed units and those preparing to deploy is of the highest priority. That leaves investment, which has to absorb a disproportionate part of the reductions until force structure is reduced. Remember, however, that in this scenario we lurch into FY2014 under a CR with no resolution of the long-term budgets we can expect and, therefore, no clear indication of how far our force structure should be reduced or how quickly. Finally, just to make matters worse, we also have the problem of the work we deferred in FY2013 as we were trying to absorb the sequestration cuts in the last half of the fiscal year. We will have to adjust our FY2014 plans to take this deferred work into account.

I have written this piece for two reasons. One reason is to let you know how I see the situation and what we need to be prepared for. The second is to again thank you for all that you do, and will do, for our country. I'm afraid that more is about to be asked of us. I say "us" because of my background and because my intention is to be with you through the next several years. The Defense Department's total acquisition community, and the industrial base that is part of that community, provide two of the three pillars of the department; we are not the warfighting force itself, but that force's technological superiority and rate of recapitalization, and its material readiness levels, will depend on how well we do our jobs in the difficult months that may lie ahead.
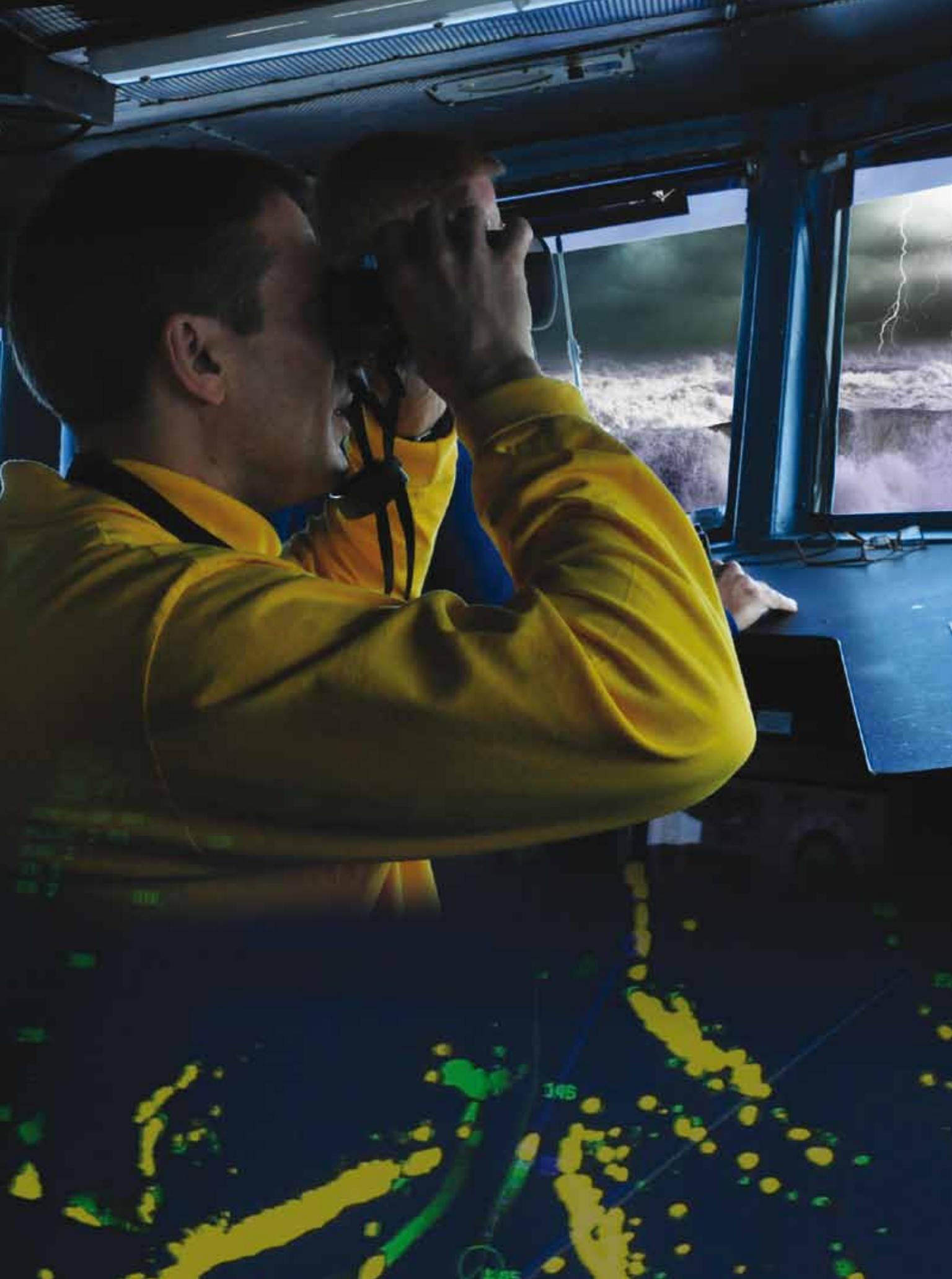
Crisis Leadership

Roy Wood, Ph.D.

I n my various tours in ships and submarines during my Navy career, I learned a few things about leading in crisis situations. Following great leaders, I've fought fires and flooding, got under way to avoid dragging anchor onto the shoals, and participated in emergency breakaways from alongside refueling oilers. Any of these events could have turned into life-or-death crises that were averted by good training and preparation, and by solid leadership.

In my time in senior acquisition positions in Washington, I also have lived through a variety of bureaucratic crises like unexpected budget cuts, reorganizations and downsizing, government shutdowns, and sequestration. None of these were life threatening, but nonetheless created situations where normal processes and procedures didn't apply and leadership was paramount in getting through the crisis. Indeed, I believe there are many parallels between the responses of great crisis leaders I saw aboard ship and those I have witnessed ashore in D.C. There are lessons for all leaders here.

Do the Right Thing

Regardless of the type of crisis, a leader's first responsibility is to assess and stabilize the situation as quickly as possible—that is, focus first on damage assessment and control. In assessing, ask: What is the nature of the crisis and how might it affect the mission, the people, and the organization? Is it controllable or is this something we need to weather?

Wood *is the dean of the Defense Systems Management College at the Defense Acquisition University and also teaches for the University of Phoenix School of Advanced Studies. He is a retired naval officer and acquisition professional.*

U.S. Navy photo by Mass Communication Specialist Seaman George M. Bell.

My first ship was anchored off the South American harbor of Punta del Este in Uruguay when a sudden squall with extreme winds and high seas began pushing the ship toward shore. The captain and commodore and a third of the crew were ashore, but the executive officer mustered the crew at stations, got the ship under way, and sailed in open ocean through the night. We hadn't been able to foresee the weather change and avert the crisis, we simply had to deal with it. Many of the regular watchstanders were ashore, but we improvised, remained vigilant, and avoided disaster. The current budget downturn, while not threatening to dash the "ship" on the rocks, is a similar crisis, in that it seems unavoidable—so leaders must step up, improvise, remain vigilant, and deal with it.

Make no mistake, however: Crisis-driven change is challenging to manage. Existing rules don't apply in the same ways. Workers can become confused, afraid, and, over time, demoralized by the situation. Leaders have to quickly improvise creative solutions to weather the crisis and keep the mission going. They also have to create a clear, positive, and compelling vision of life after the crisis, and encourage others to help move the organization toward that better future. While in the midst of the crisis, leaders who can keep the organization focused on mission and outcome can help others see beyond the immediate chaos, avoid self-doubt and pity, and avert stagnation that results from indecision.

on, we still are struggling to reconstitute a capable acquisition workforce that can effectively manage those inherently governmental functions.

Remain Poised

On submarines, the entire crew is expected to know all the ship's systems and be able to accomplish damage control procedures. When a problem occurs, the senior officer or enlisted man in the damaged compartment is expected to announce to all that he has assumed leadership of the damage control efforts. At that moment, all authority and responsibility for the efforts on the scene are vested in that single leader. Fire or flooding in a submarine is a very serious matter. Indeed, in every crisis, regardless of context or location, stability is disrupted, and people immediately recognize that they can no longer conduct business as usual. Many are swept up in the emotional upheaval and unable to act on their own. In this environment of uncertainty and ambiguity, people look for decisive and poised leaders to provide stability, guidance, and reassurance. In the midst of chaos, a poised leader becomes the calm in the center of the storm.

In one memorable example, I was assigned as a project officer in a naval shipyard. One of the ships in overhaul was defueling, but a misalignment of valves took fuel from tanks in one side of the ship faster than the other. The ship began to list to one

There are many parallels between the responses of great crisis leaders I saw aboard ship and those I have witnessed ashore in D.C. There are lessons for all leaders here.

Be Wise

Leaders also must use all their wisdom and foresight to ensure decisions made in the thick of the crisis will not have unintended consequences that may exacerbate the damage or threaten operations after the crisis is over. Many shipboard fires can be extinguished with water, but pumping too much water into the ship can create a whole new set of problems. Likewise, in times of budget drawdowns, leaders must wisely weigh the future impacts of indiscriminately trimming the workforce and cutting training and contracts—changes that may threaten future operations.

The loss of trained and talented individuals and important programs can harm the future of our military capabilities and national security. Once cut, these things are difficult or impossible to reconstitute after the crisis has passed. In the 1990s, for example, the post-Cold War "peace dividend" saw the defense acquisition workforce severely cut back, and many of the responsibilities taken up by defense contractors. Twenty years

side until one of the hull cut openings used to remove equipment dipped below the waterline. The ship began seriously flooding, and, while alert sentries sounded the alarm, most of the shipyard workers and crew stood petrified, watching the disaster unfold. Fortunately, the ship's captain rushed to the scene and quickly assessed the situation. He immediately ordered defueling operations to cease and called for all personnel onboard to move to the opposite side of the ship from the flooding. With the extra weight suddenly shifted away from the opening, the ship's list improved and the hull cut was lifted above the waterline. The captain's decisive, poised, and innovative leadership saved the ship from potentially sinking alongside the pier.

Be Bold

Crises can be viewed either as disruptive and dangerous problems to be solved or as opportunities to create something new and better. Budget drawdowns, for example, are unpleasant periods of disruption where tough and painful decisions have

to be made. Resources are diminished, plans must be modified, and sometimes loyal and dedicated people have to be fired. Too often, leaders view these periods as times to hunker down, try not to be noticed, and preserve as much of the past as possible.

Effective leaders, on the other hand, view crises as "burning platforms" to enable creative change. Reductions in resources require organizations to work smarter, to be more innovative,

smoking and aluminum bulkheads were distorting from the heat. Dozens of the ship's firefighters were suited up to battle the supposed fire, but no blazes could be found. Suddenly, the senior chief gas turbine technician leaped from his seat in main control and ran from the compartment. Several minutes later, he called to report that he had secured a failed anti-icing valve that had been allowing very high temperature air from the engine to flood the intake shaft. The senior chief earned a medal, the new damage control crew learned a valuable

> **Bold leaders view these times as opportunities to go beyond simple damage control and look for ways to emerge from the crisis stronger, better, and more resilient.**

and to move away from solving hard problems simply by throwing money or people at them. Bold leaders view these times as opportunities to go beyond simple damage control and look for ways to emerge from the crises stronger, better, and more resilient.

In an unusual tour of duty, I was in charge of operations at a high-energy laser test facility. Funded testing had dropped off significantly, threatening the site's viability. Rather than despair, we used a portion of the down time to modify the laser's beam director in order to use it as a high-resolution telescope. We then found opportunities to use it to collect images of missile intercepts high above the range. The fees we collected for those events helped tide us over until new laser business arrived, and we developed a reputation as one of the range's best imaging sensors. We turned a crisis into an opportunity by being bold and innovative.

Celebrate the Victory
Finally, as the organization emerges from the crisis, leaders should recognize the heroes and celebrate the victory. Crises can be bonding events for individuals and opportunities for organizations to create enormous esprit de corps. Survivors emerge from the crisis stronger, smarter, and "battle hardened." Further, organizations that capture the lessons learned and capitalize on putting new processes in place will be better prepared for any future crisis. This way, the event becomes a positive learning and growing opportunity with an enduring purpose and legacy. Crises truly are the stuff from which legends are born.

We were less than 2 hours out of the shipyard in our newly commissioned destroyer when fire alarms were called on several decks in compartments surrounding the air intake for one of our gas turbine main propulsion engines. Insulation was

lesson, and the ship sailed successfully after repairs were made. Everyone onboard that day still remembers the crisis and the hero who responded to it.

Conclusion
Crises are times of great angst—and great opportunity. Poised and decisive leaders who step forward to offer innovative solutions to weather the storm will find followers eager to help. Whether a shipboard disaster or a budget drawdown, crises demand both immediate action and a longer view beyond the crisis.

Here is an extreme example from maritime history: In Ernest Shackleton's now famous exploration mission to the Antarctic, his ship was trapped for months in the ice, during which time he kept his crew members occupied with tasks to keep them alive. He also kept them motivated with the vision and hope that they would get through the crisis and be reunited with their families. After 10 months of being trapped, the ship suddenly was crushed by the thick, heavy ice and sank, adding to the crisis. Yet Shackleton still did not allow his men to give up. Rather, he enlisted the crew to drag the lifeboats miles over the ice to open water, sailed one of the boats to safety, and returned on another ship to rescue the remainder of his crew.

The coming fiscal downturn is clearly not a crisis of the magnitude faced by Shackleton, but it will be confusing, uncomfortable, and difficult for many in the acquisition workforce. Yet it also will be an opportunity to learn, to try new things, and to emerge stronger, leaner, and smarter. We owe it to our warfighters and our country to remain poised, confident leaders through this crisis.

Risky Business

Why DoD Needs a New Risk Management Paradigm

Thomas H. Miller

epartment of Defense Instruction (DoDI) 5000.2—"Operation of the Defense Acquisition System"—the DoD's "Bible" for Program Management (PM), uses the word "risk" 67 times within its 80 pages but only has a minimal passing reference to "Risk Management" in the section related to service contracting, defining it as "An assessment of current and potential technical, cost, schedule, and performance risks and the plan for mitigating or retiring those risks."

The Project Management Institute (PMI) *Guide to the Project Management Body of Knowledge* (also known as the *PMBOK*) includes a much longer chapter on Risk Management (RM). Given that risk is a significant concern in DoD program/project management, why is the process of managing risk given such short shrift in the DoDI 5000.2, particularly in comparison to the commercially focused *PMBOK*? Is the commercial PM community more concerned with RM than is the DoD community?

Miller *is the assistant program executive officer (program management) within the Program Executive Office for Land Systems (Marine Corps) and is a former Marine Corps program manager and Army contracting officer. He currently is working at the Joint Staff J-8 Capabilities and Acquisition Division on a rotational assignment.*

The answer to the second question is "No, both are (or should be) equally concerned with RM." The answer to the first question is the basis for this article. The lack of guidance on RM in the DoD acquisition "Bible" is indicative of a curious lack of focus on RM within the DoD acquisition leadership organization, in terms of repeatable processes, standardized documentation, and adequate training for personnel.

I believe this lack of focus is a proximate cause of the continuing problems DoD has had in delivering consistently successful results for its programs. Most DoD program/project managers (PMs) implement RM processes for their programs, but my experience is that these are halfhearted, "check-the-block" efforts that do not capture the true risks of the program or, even worse, that sugarcoat the actual risks. In either case, program risk is underreported to leaders and stakeholders, and unmitigated risk events quickly turn into serious issues.

Simply stated, RM is a continuously iterative process that includes several steps: identification and measurement of program risks and their root causes; identification and implementation of appropriate mitigation measures; and tracking and reporting the risks through retirement. The DoN Risk Policy states: "An effective risk management process is evidenced by early identification and analysis of risks, planning to mitigate those risks, early implementation of corrective actions, and continuous tracking and reassessment." Note the key words in this statement—"early" and "continuous"—emphasizing again that an effective RM process needs to be proactive and reassessed continuously. Due to the dynamic DoD environment—with rapidly evolving technologies, continual threat changes, and arbitrary funding cuts—PMs need to conduct (and reconduct) RM reviews regularly, to make sure new or changed risks are identified and appropriate mitigation plans are executed.
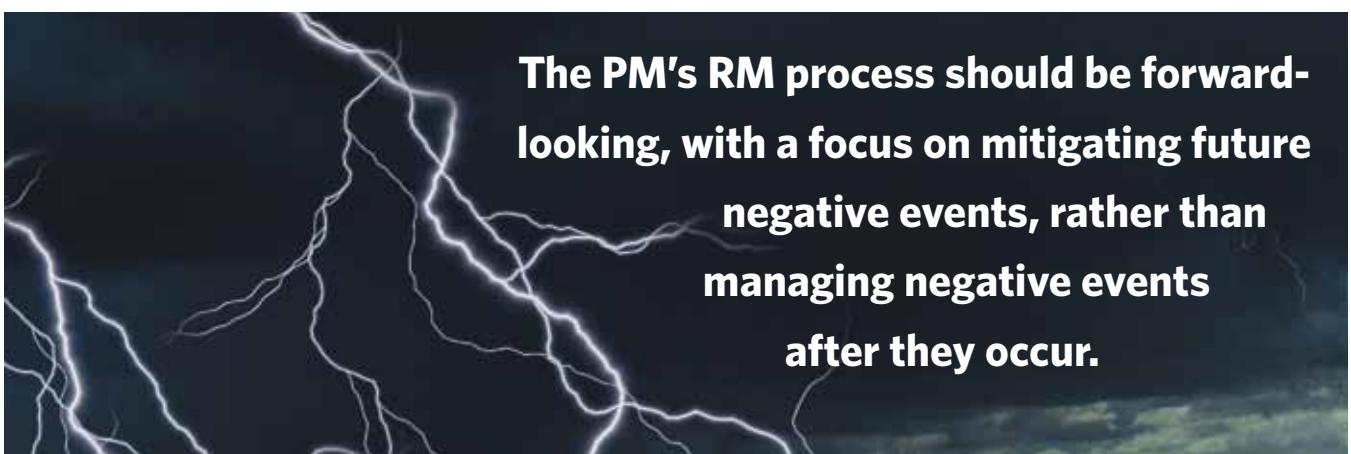
The PM's RM process should be forward-looking, with a focus on mitigating future negative events, rather than managing negative events after they occur.

The DoD acquisition leadership needs to recognize the importance of rigorous, proactive RM, provide clearly documented guidance that requires PMs and Program Executive Officers (PEOs) to establish and implement RM processes in their programs, and ensure implementation through independent, senior-level reviews of risks at program technical and milestone events.

An Overview of Risk Management in Defense Acquisition Programs

Despite the lack of coverage in DoDI 5000.2, there actually are several good, common-sense publications and instructions available on RM in the DoD community. I will leverage two of these heavily in this article: the Defense Acquisition University (DAU) *Risk Management Guide for DoD Acquisition* (hereinafter referred to as the *DAU Risk Guide)* and the Department of Navy (DoN) Instruction titled Naval SYSCOM Risk Management Policy (hereinafter referred to as the DoN Risk Policy).

The *DAU Risk Guide* makes a clear statement of the importance of RM: "Risk management is a key element of a PM's executive decision making. DoD risk management is based on the principle that risk management must be forward-looking, structured, continuous, and informative."

Risks vs. Issues. A risk is an uncertain, possible future event that could have a negative impact on a program's outcomes and deliverables, particularly those cost, schedule, and performance requirements identified in the Acquisition Program Baseline (APB). An issue can be defined as a risk that has already occurred—i.e., a negative impact currently occurring or that has occurred in the past. The *DAU Risk Guide* points out the significant difference in managing risks vs. issues: "A common misconception, and program office practice, concerning risk management is to identify and track issues (vs. risks) and then manage the consequences (vs. the root causes). This practice tends to mask true risks, and it serves to track rather than resolve or mitigate risks." In summary, the PM's RM process should be forward-looking, with a focus on mitigating future negative events, rather than managing negative events after they occur. This difference has been compared by Paul Lohnes and Cheryl Wilson to "fire prevention" vs. "fire alarms"—a good analogy, as most would agree it is better to prevent a fire than clean up after it has occurred.

Planning the Plan: Risk Management Objectives, Process Steps, and Definitions.

There are several common, recommended steps in establishing a RM process for a program. The first step, of course, is

documenting the process in a program Risk Management Plan (RMP). The *PMBOK* explains the purpose of the RMP: "The risk management plan describes how risk management will be structured and performed on the project." In short, the RMP describes the end-to-end process for risk management on the program; helping to ensure that the process is performed thoroughly and iteratively. The *PMBOK* also states that the RMP shall include the following content: Methodology, Roles and Responsibilities, Budgeting, Timing, Risk Categories, Definition of Risk Probability and Impact, Probability and Impact Matrix, Revised Stakeholders' Tolerances, Reporting Formats, and Tracking. So the RMP needs to address the famous "Five W's": who is involved in the process; what steps are involved; the "whys" of the process (i.e., what are the objectives of the process); when is the process performed (how often); and where is the process performed (location and resources); as well as the one "H"—how will the process be performed in support of the program.

The RMP is the most important RM tool in the PM's toolbox. It establishes and documents the program RM process, identifies roles and responsibilities in the RM process, provides a common lexicon for RM communications inside and outside the PM Integrated Product Team (IPT), and ensures that risk is managed adequately and appropriately throughout the program life cycle. Publication of the RMP as early as possible in the program life cycle is the most significant step the PM can take toward program success. The RMP is intended to be a "living document" actively used, referred to, and updated regularly. As stated in the *DAU Risk Guide*: "As a program transitions through developmental and operational testing, and then to end users during sustainment, a program RMP should be structured to identify, assess, and mitigate risks that have an impact on overall program life-cycle cost, schedule, and/or performance." Since the RMP is meant to be used regularly by the PM IPT, it should be as simple as possible in content and format, and should include only the minimum essential information required to fully document the program RM process.

The Concept of Formally Accepting Residual Risk. Residual Risk is defined in the DoN Risk Policy as "the risk that remains after mitigation." Why is this concept important? In the DoN process, the PM IPT conducts two passes through the risk assessment portion of the RM process. In the first pass, the risk is assessed and classified without mitigation applied; and in the second pass the risk is reassessed and reclassified (using the same Probability/Impact Matrix) assuming the selected mitigation(s) have been effected. The result of the second pass assessment is called "Residual Risk." The benefit of this two-pass approach is that it ensures both full assessment of the risk and that the appropriate risk mitigation action is selected. Also, under the DoN process, the level of authority that can formally "accept" the risk is based on the Residual Risk rating, with higher-level risks requiring higher-level approvals, both in terms of programmatic authority (up to the Milestone Decision Authority) and technical authority (up

to the commander of the Systems Command). This process ensures "top cover" for the PM, as well as increased situational awareness on program risks for the senior leaders who own the program.

Why a Proactive RM Process and Culture Matters. The essence of risk management is to actively anticipate future negative events and take immediate action to mitigate their potential effects on program results and deliverables. It can be argued that "proactivity" and "risk management" are interchangeable terms. Lohnes and Wilson state that proactivity is the highest stage in their "Risk Management Maturity Model": "Proactivity is both cost-effective and valuable in a risk management program since dealing with mitigation is considerably more efficacious than trying to 'play catch-up' after a known risk has triggered into demanding reality." Proactive RM is driven both by process and culture. A well-developed and -implemented RM process will force PM IPTs to continually assess their programs' risks. But process alone is not enough. PMs and senior leaders also need to foster a culture that incentivizes and rewards PM IPTs who conduct honest, thorough RM, and who transparently communicate those risks to all stakeholders. Dr. David Hulett states: "Commitment to risk awareness is a main action that an organization should take to make a risk management program successful. Creating the atmosphere that makes communicating about risk possible and safe to do is a key component of the risk aware culture." Culture change is by far the hardest part of implementing an effective RM process. It is driven from the top down; and requires continual effort. Senior leaders need to allow the PMs and their program IPTs the latitude to identify risks aggressively and freely report them up their chain of command, while stressing the importance of the RM process through clear policy, as well as through due diligence reviews and approvals of program risks. Such senior policy, support, and oversight currently are missing from the DoD, as evidenced by the lack of emphasis in the DoDI 5000.2, and ultimately by the continued poor DoD program performance record. As a result, PMs generally develop reactive and shallow RM processes, rather than the proactive, in-depth RM processes such technically complex programs require, and paper over serious risks in order to keep their programs moving forward.

How Do We Fix The DoD RM Process?
Hopefully, the foregoing brief, top-level discussion has been persuasive in establishing that current RM policy, processes, and overall emphasis on the topic are not sufficient for the highly complex DoD acquisition programs. Here are a few recommended steps that DoD leadership can take to improve this situation:

- Immediately acknowledge the problem and take steps to fix it. DoD acquisition leaders should publicly admit the current lack of policy and focus on proactive RM in their programs, and take positive, expeditious steps to correct this problem. The first step would be to form a senior RM

steering group within the Acquisition, Technology and Logistics (AT&L) organization, led preferably by the under secretary or, at a minimum, by a director or assistant secretary. This group would become the RM process owners. The steering group members then should form a Working IPT (WIPT), and task it with quickly developing appropriate policy, documenting a more robust, rigorous process. The new RM policy could be promulgated by AT&L directive, followed by appropriate modifications to DoDI 5000.2. The RM steering group and WIPT should continue to monitor implementation and execution of the RM process.

• Improve the rigor of acquisition training on RM. The RM steering group should concurrently task the DAU with an "end to end" review of current acquisition training content,

program risks, and establish approval review processes for residual risks and associated mitigation plans. Every program—regardless of Acquisition Category (ACAT) level—should be required to have an RMP, approved by the PM and PEO or Milestone Decision Authority, and assign a risk manager. Key stakeholders should be represented on the program RMB, particularly technical warrant holders in order to ensure independent assessment of technical and safety risks.

• Leadership at all levels should continually push for a RM-focused culture. Through policy, words, and actions, leaders at all levels should encourage a positive RM culture within the DoD acquisition workforce—one that awards open and honest assessment and discussion of risks and
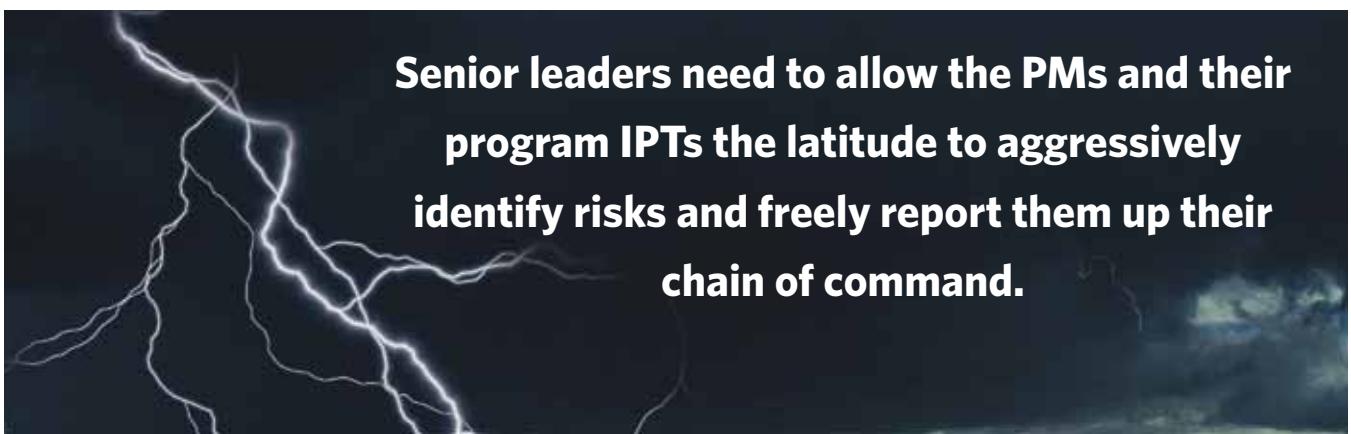
> **Senior leaders need to allow the PMs and their program IPTs the latitude to aggressively identify risks and freely report them up their chain of command.**

with a focus on recommending ways to increase emphasis on RM. DAU then should conduct an expedited phase-in of the new RM content, with initial focus on PM certification training, but eventually expand to all career certification coursework.

• Service Acquisition Executives (SAEs), PEOs, and PMs should take ownership of the RM process. Leveraging the new policy of the Office of the Secretary of Defense (OSD), the individual Services should take aggressive measures to improve RM direction in their internal acquisition policy documents (for example, the Secretary of the Navy Instruction 5000.2). For major defense acquisition programs, the Service Acquisition Executives (SAEs) should form a senior-level Risk Management Board (RMB) to review and approve residual program risks and mitigation strategies. This board should be integrated into internal service program review processes and events (such as Navy Gate Reviews and Army Systems Acquisition Review Councils).

• PEOs and PMs should implement proactive, transparent RM processes in their programs. PEOs and PMs should review their current RM processes, including program RMPs, and take appropriate steps to make them more proactive and forward-looking (rather than reactive), ensure that PM IPTs actively and honestly assess and report

root causes, and emphasizes proactive, action-oriented RM processes.

One Final Point—Risk Management is Not Risk Aversion

In the course of assessing the current DoD RM processes, discussing their readily apparent shortcomings, and recommending ways to implement more robust, proactive policy and processes, one should not infer that I advocate developing a risk-averse culture. Quite the opposite—I believe DoD should be more willing to take risks in order to ensure and expand the edge our warfighters enjoy. But those risks should be well understood, mitigated, and communicated before they occur. Establishing a robust, proactive RM process is absolutely essential in making this happen. The current weak, reactive DoD RM process actually results in greater risk aversion, as risks that are not identified and actively mitigated early on quickly turn into issues that bust cost, schedule, and performance metrics, leading PMs and their IPTs to be more conservative in planning and executing future programs, with negative implications for acquisition life-cycle costs and schedule durations. Programs with proactive RM programs result in more predictable results, which in turn improve the confidence of program personnel and stakeholders. &

OSD's Obligation and Expenditure Rate Goals

An Examination of the Factors Contributing to the Interference

Robert L. Tremaine ■ *Donna J. Seligman*
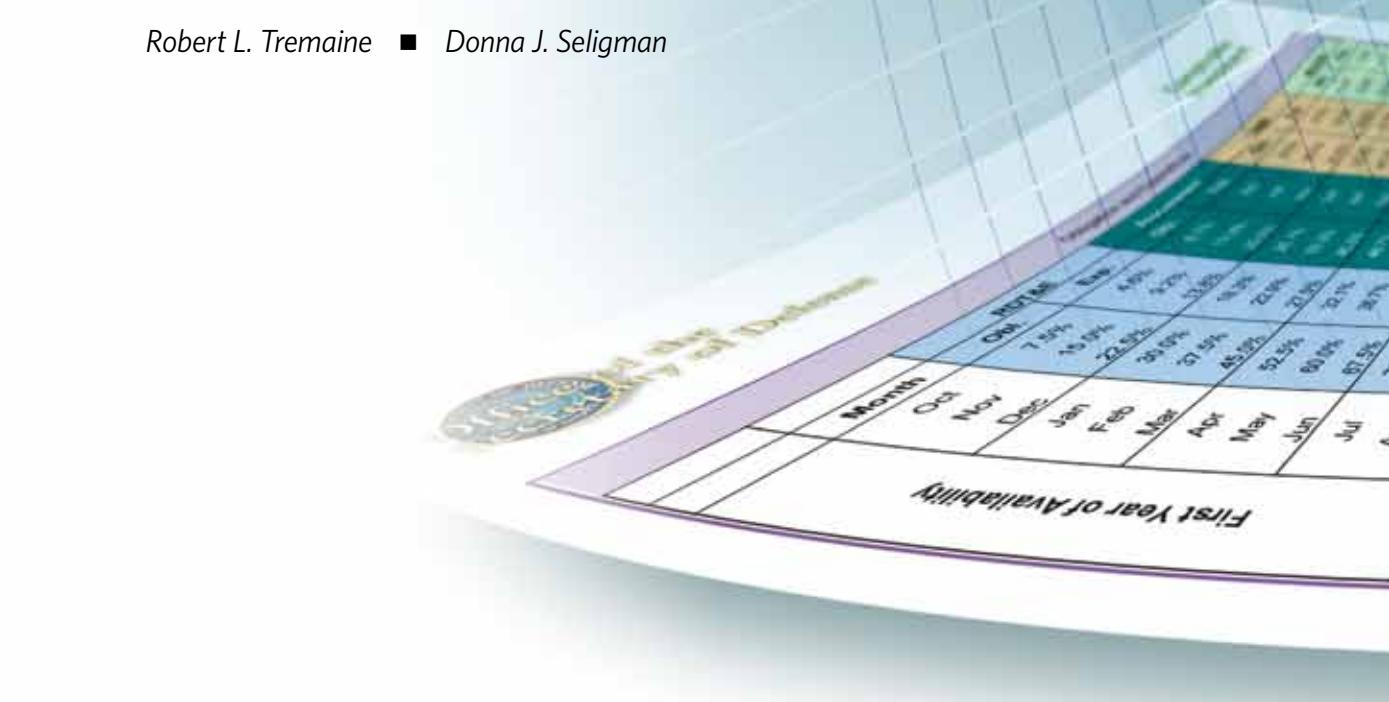
S everal months ago, Dr. Nancy Spruill, director of Acquisition Resources and Analysis, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD (AT&L)), solicited support from the Defense Acquisition University (DAU) to help uncover the causal factors that could be interfering with attainment of the Obligation and Expenditure rate goals of the Office of the Secretary of Defense (OSD).

Decades earlier, OSD instituted these goals as a benchmark to help weapon systems program offices maintain the required execution pace of appropriated funding. However, due to a number of internal and external factors, Department of Defense (DoD) acquisition programs have sometimes found it difficult to meet these goals.

To learn more about the intervening obstacles, DAU with assistance from OSD developed a comprehensive survey that queried experienced and high-level DoD personnel involved in a weapon program's decision chain. What we learned from the subsequent analysis confirmed several previous suspicions. The data also indicated the prevalence of more underlining perception variances among many of the factors that could be undermining program execution itself.

Tremaine *is an associate dean for outreach and mission assistance at the Defense Acquisition University's West Region with more than 30 years of acquisition experience in program management and systems engineering.* **Seligman** *is a program management analyst at DAU West Region with more than 20 years of experience in developing business applications, performing system analyses, and conducting research.*

The study results were presented to Assistant Secretary of Defense for Acquisition Katharina McFarland and other senior OSD personnel. It also reinforced the value of the memorandum on the disposition of DoD's unobligated funds, which was signed jointly by Under Secretary of Defense (AT&L) Frank Kendall and Under Secretary of Defense (Comptroller) Robert F. Hale.

Recommendations Up Front

Based on the research findings of this study, there are a number of impact factors above $\bar{x}$ (i.e., above that mean) that if addressed sufficiently could help lower the barriers to attainment of OSD's obligation and expenditure rate goals. Specifically:

- Institute an Obligation and Expenditure baseline adjustment for programs affected by any funding delay or limitation (especially Continuing Resolution Authority [CRA]), then measure a program's progress to that revised adjustment.

- More thoroughly review the entire contracting action value chain. Look closely at efficiency opportunities along the review and decision cycle continuum, especially from the time a request for proposal (RFP) is developed to the time a contract is let. Set reasonable time thresholds with triggers that afford more proactive measures by program managers (PMs) and confirm productivity.

- Establish a recurring communication forum among key stakeholders, especially PMs and OSD, to dialogue more frequently and eliminate perception gaps that could be creating counterproductive actions and misconceptions.

- Track requirement changes throughout a program's life and look more strategically at the effects on program execution and accompanying Acquisition Program Baselines (APBs). Despite Acquisition Category (ACAT) Levels, there is an obvious ripple

Checks and balances within the DoD's acquisition community are a vital constituent component of program execution—but every review should have a distinctive purpose, exit criteria, and associated suspense date that are just as material and credible.

community are a vital constituent component of program execution—but every review should have a distinctive purpose, exit criteria, and associated suspense date that are just as material and credible.

• Build and maintain realistic spend plans, measure against them, account for contingencies and make adjustments with required frequency due to real world realities. Collaborate with senior leadership early enough about required adjustments to avoid more draconian measures later.

• Validate the key personnel shortage areas and recognize the time it takes to rebuild those experience levels.

• Nurture experience in key functional areas with strong catalysts such as disciplined on-the-job-training programs, mentoring, and guidance. With the recent surge of contracting specialist interns, their progress as a group should be measured more carefully.

• Evaluate the real effects of reprogramming action or realignment of future budget decisions before any corrective action is taken.

• Conduct a wholesale review of the program execution metrics currently in place and determine their usefulness and effectiveness. What are they actually measuring? Consolidate whenever practical and eliminate those that have outlived their usefulness.

Research Methodology

Two hundred and twenty-nine DoD personnel responded to this survey. The respondents were comprised of program office personnel (program managers (PMs), deputy PMs, budget and financial managers, and contracting officers), program executive officers (PEOs), and their chief financial officers (CFOs), and a variety of senior staff at OSD, including Headquarter Financial Management (FM) senior staff and Senior Acquisition Executive (SAE) staff (Table 1). Because several functional areas saw lower response rates, a more detailed analysis of the causal factors was restricted to an aggregate sample size given the confidence levels required to draw any inferences or conclusions.

effect associated with any substantive change in program content across a program's life that should be codified more comprehensively. However, there also are issues associated with different ACAT levels.

• Review the program review cycle and streamline wherever possible. Checks and balances within the DoD's acquisition

Table 1. Individual Respondent Groups

	Survey Respondent Details								
	ACAT Levels			Respondent Groups			TOTALS		
Respondent Distribution[1]	I	II	III	Program Office[2]	PEO[3]	Senior Staff[4]	Responses	Queried	Response Rate
Total	91	28	23	142	63	24	229	698	33%

[1] Includes sampling from all Components and several DoD agencies
[2] Program managers, deputy program managers, budget and financial managers (BFM), deputy BFMs, and contracting officers
[3] Program executive officers (PEOs), deputy PEOs and their chief financial officers
[4] Headquarters financial managers and senior acquisition executive staff

Respondents ranked the impact of 64 factors under nine categories (Figure 1). The researchers then assessed the rankings using a top box three methodology (i.e., averaging the percentages of 5, 6, and 7 on a Likert scale from 1 to 7). Since the frequency of occurrence for some factors also could be contributing to the interference, the researchers included an additional selection (e.g., daily, weekly, monthly, etc.) to isolate any potential ignition areas.

Discussion

The Causal Factors Contributing to Low Obligation and Expenditure Rates

Figure 2 shows the distribution of all 64 factors assessed. Three factors reported an impact rating of two standard deviations (also called sigma [σ]) above the mean (denoted by +2σ); six factors reported an impact rating of one standard deviation above the mean (denoted by +1σ); and 22 factors fell above an average (also called x-bar [$\bar{x}$]) impact rating (denoted by $\bar{x}$). The remaining 33 factors fell below $\bar{x}$.

Nineteen of the 22 factors measured for frequency of occurrence resulted in an impact rating above 39 percent. Sometimes, just one occurrence appeared to have a significant impact.

Figure 1. Factor Categories
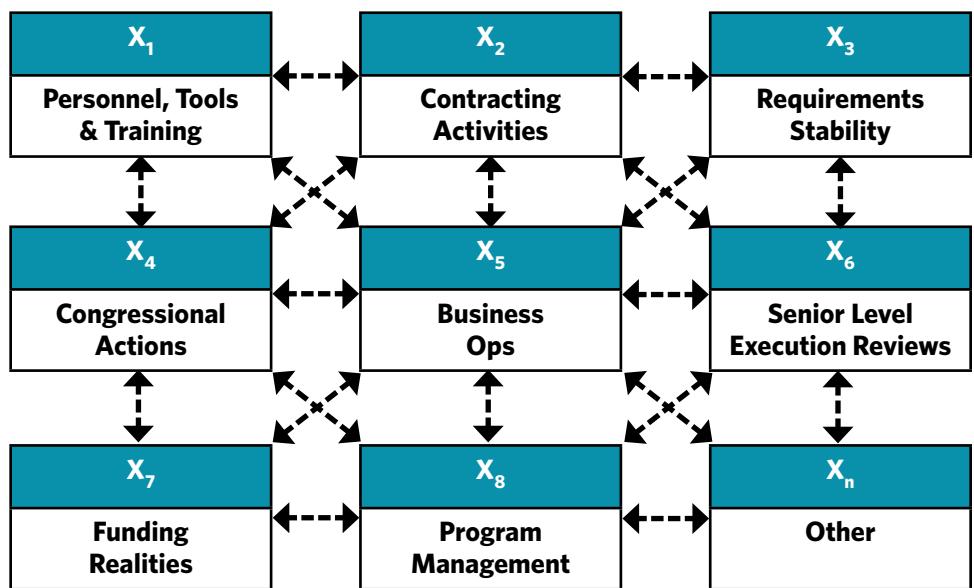
Table 2 accounts for the 31 factors above the mean. They were the only ones further evaluated in this study unless a factor shifted above $\bar{x}$ after any further specific delineation (e.g. ACAT levels, military departments, agencies, etc.). The individual factors showed widespread perception disparities (see Low vs. High columns in Table 2) among the respondent groups for the factors that fell below +2σ. After analyzing the specific individual factors among all the respondents, seven of the 31 factors had an unusually large σ. As a result of these conspicuous gaps, we turned to the qualitative data. We also watched for any strong correlations (e.g., positive quantitative correlation coefficients (r) > 0.7 or qualitative comments) to better understand the reasons for the differences as well as the influence of any intervening and/or moderating factor couplings. The remaining discussion addresses the 31 impact factors in descending order from highest to lowest.

The Factors that Ranked Two Standard Deviations above the Mean (i.e., + 2σ)

This first grouping (Table 2, factors F[1]-F[3]) indicated release of full obligation/budget authority due to Continuing Resolution Authority (CRA) (F[1]), contract negotiations delays (F[2]), and contract award delays (F[3]) all rose above 2σ. The occurrence of CRA had the most significant negative impact to Obligation and Expenditure rates. It also had one of the smallest variances (σ) among the respondent groups. Even with the expectation that CRA

Figure 2. Factor Ranking Distribution

might prevail and the subsequent planning that followed for such a likely event, many PMs pointed to an overly conservative and slow internal vetting process that created additional obstacles in meeting OSD goals.

Several PMs recommended using some sort of "CRA variable" to temporarily offset the consequences of CRA if the required funds were not released as originally projected. Next in rank order were contract negotiations and contract award delays. The respondents emphasized that DoD could fix the problems more readily since, unlike CRA, they were under internal control. When asked what could be done to reduce the adverse effects of all three factors, the respondents recommended the "inclusion of more risk mitigation into contract award planning, more realistic timelines, more realistic plans, greater funding stability, reduction in bureaucratic obstacles, more synchronized internal processes, and better aligned accounting systems."

The Factors that Ranked One Standard Deviations above the Mean (i.e. +1σ)

The second line of demarcation (Table 4, factors F^4-F^9) contained a majority of contracting-related factors (i.e., shortage of contracting officers (F^4), contractor proposal prep delays (F^6), RFP prep delays (F^8), and source selection (F^9) predominated. Nearly all the factors showed the emergence of a more alarming σ between the individual respondent groups—as high as 18 percent in one case (i.e., proposal prep delays [F^6]). For this particular factor, procuring contracting officers (PCOs) reported the highest impact while PMs ranked it as the lowest. Senior staff cited that shortage of contracting officers (COs) (F^4) created the highest impact while PCOs reported it had the lowest impact. With a 7 percent σ, it was the lowest among all six factors in this grouping.

Given that six of the top nine factors in were contract-specific factors that ranked above +1σ, it came as little surprise to see so many reinforcing comments surface.

Table 2. Impact Factor Ratings in Aggregate Descending Order With Respondent Group Low and High Ratings

Factors 1-31	AR*	Respondent Groups			
		Low	High	$\bar{x}$	σ
F^1 Late release of full obligation/budget authority due to CRA	69%	63%	78%	71%	6%
F^2 Contract negotiations delays	67%	60%	79%	70%	8%
F^3 Contract award delays	67%	60%	79%	68%	8%
+ 2σ = 67%					
F^4 Shortage of contracting officers	64%	54%	74%	64%	7%
F^5 Congressional mark	61%	55%	77%	63%	8%
F^6 Contractor proposal prep delays	60%	45%	88%	65%	18%
F^7 OSD directed RMD adjustment	58%	43%	70%	60%	10%
F^8 RFP prep delays	57%	52%	79%	59%	13%
F^9 Source selection delays	55%	38%	74%	58%	12%
+1σ = 53%					
F^{10} Unrealistic/overly optimistic spend plans	52%	34%	86%	58%	19%
F^{11} Changes in user requirements	51%	33%	72%	56%	14%
F^{12} Changes to program acquisition strategy	51%	40%	75%	54%	14%
F^{13} Changes in other stakeholder requirements	50%	39%	67%	51%	9%
F^{14} Preparing DAE level review and decision	50%	44%	54%	50%	6%
F^{15} Lack of decision authority at expected levels	50%	40%	82%	52%	16%
F^{16} Implementation of new OSD/ Service policy	49%	30%	8%	55%	19%
F^{17} Component directed POM adjustment	49%	35%	61%	48%	10%
F^{18} Awaiting reprogramming action	49%	32%	82%	51%	19%
F^{19} Changes in user priorities	47%	39%	55%	49%	6%
F^{20} Realistic spend plans but risks materialized	45%	35%	80%	48%	18%
F^{21} Program delays resulting from additional development, testing or other prerequisite events	44%	32%	59%	46%	11%
F^{22} DCAA administrative actions	44%	33%	60%	45%	10%
F^{23} Unplanned congressional adds to PB request	43%	31%	66%	44%	13%
F^{24} Use of undefinitized contract action delays	42%	17%	56%	43%	15%
F^{25} Expenditure contingent on hardware delivery	41%	17%	59%	42%	16%
F^{26} Loss of funding through reprogramming action to higher priority req'ts to PEO portfolio	41%	33%	55%	43%	7%
F^{27} Lack of experience levels in key acquisition functional areas	40%	24%	56%	44%	14%
F^{28} Awaiting DAE level review and decision	40%	30%	65%	44%	19%
F^{29} Shortage of Cost Estimators	40%	27%	52%	41%	8%
F^{30} Shortage of business/finance personnel	39%	26%	57%	43%	12%
F^{31} Programmatic conflicts between government and prime contractor	39%	22%	67%	44%	17%
$\bar{x}$ = 39%					

*Includes All Responses (AR)

- "Lack of experienced and qualified contract specialists … ."
- "Alarmingly low personnel qualified … many unsure/lack guidance and experience … ."
- Significantly stressed with overtime to complete all contracting actions prior to close of fiscal year."
- "Inadequate training … inordinate number of interns with very low experience in all career fields."
- "Lack of sufficient legal personnel trained in Acquisition."
- "Loss in brain trust and skill to develop complete, clear SOWs [statements of work] using proactive contract language."
- "SOW writing and the teaching of SOW-writing classes is greatly left to contractors or support contractors, resulting in unclear language."

The highest frequency of occurrence also was associated with contracting-related factors (Figure 3). By far, Shortage of Contracting Officers (F^4) was reported as the single highest frequency among all 22 factors measured for frequency. Because the contracting activity timeline generally has lengthy durations, any disruption appears to have an unmistakable impact on contract award. F^4 was seen has having the most significant. As an aggregate group, the respondents said multiple contracting actions were having compounding consequences.

The two remaining factors above +1σ, Congressional marks (F^5) and OSD directed RMD adjustment (F^7), had a very low frequency of occurrence but still reported a very high impact similar to CRA. When combining all three, they appear to be a strong antecedent force (or moderating factor) to the already time-consuming chain of contracting actions.

### The Factors that Ranked Above the Mean (i.e. $\bar{x}$)

This final grouping (Table 2, factors F^{10}–F^{31}) accounted for the remaining 22 impact factors. Perception polarities persisted especially between two respondent groups—senior staff outside the program office and PMs inside program offices. As a result of the PMs' selections in every case except one (i.e., Component-directed Program Objective Memorandum (POM) adjustment [F^{17}]), the impact factors ranked well below $\bar{x}$. In sharp contrast, senior staff in every case except one (i.e., Component-directed POM adjustment [F^{17}]) stated the majority of top 31 factors had the largest impact.

Even though the remaining impact factors above $\bar{x}$ still are significant, the researchers shifted the focus to the presence of any strong correlations since factor couplings could be having a moderating effect and require a closer look.

The Factors that Correlate

Table 3 summarizes the strongest and weakest factor correlations for all respondents queried. Several strong cor-

Figure 3. Scatter Plot of Impact Factors with Frequency

Scatter Plot Results ≥ $\bar{x}$ (for impact)

Frequency α = .70 $\bar{x}$ = 3.36

Impact α = .73
$\bar{x}$ = 3.82
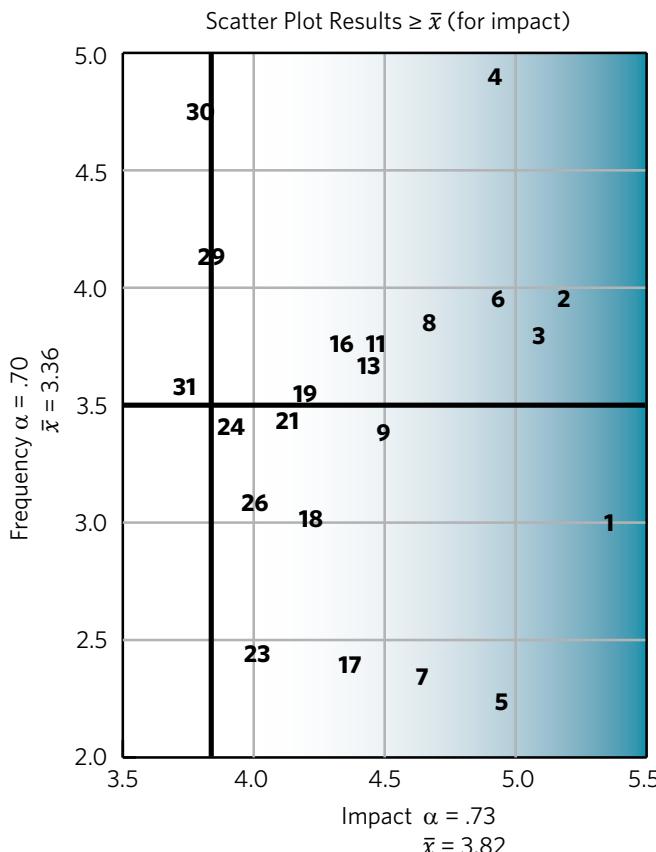
1   **Late release of full obligation/budget authority due to CRA
2   **Contract negotiation delays
3   **Contract award delays
4   **Shortage of contracting officers
5   **Congressional mark
6   **Contractor proposal prep delays
7   **OSD directed RMD adjustment
8   **RFP prep delays
9   **Source selection delays
10 *Unrealistic/overly optimistic spend plans[1]
11 *Changes in user requirements
12 *Changes to program acquisition strategy[1]
13 *Changes in other stakeholder requirements
14 *Preparing DAE level review and decision[1]
15 *Lack of decision authority at expected levels[1]
16 *Implementation of new OSD/Service policy
17 *Component directed POM adjustment
18 *Awaiting reprogramming action
19 *Changes in user priorities
20 *Realistic spend plans but risks materialized[1]
21 *Program delays from additional development, testing or other prerequisite events
22 *DCAA administrative actions[1]
23 *Unplanned Congressional adds to PB request
24 *Use of undefinitized contract action delays
25 *Expenditure contingent on hardware delivery[1]
26 *Loss of funding through reprogramming action to higher priority require ments to PEO portfolio
27 *Lack of Experience levels in key acquisition functional areas[1]
28 *Awaiting DAE level review and decision[1]
29 *Shortage of Cost Estimators
30 *Shortage of business/finance personnel
31 *Programmatic conflicts between goverment and prime contractor

** ≥ +2σ
** ≥ +1σ
* ≥ $\bar{x}$
[1] Impact without frequency

Table 3. Factor Correlation Couplings

r	r2*	Strongest Correlation Coefficients	Weakest Correlation
.84 .78	71% 61%	Experience and Training and Tenure: F[27] Key Acquisition Experience Levels & F[48] Inadequate Training F[27] Key Acquisition Experience Levels & F[46] Tenure of PM & Other Key Positions	F[1] Late release of full obligation/budget authority due to CRA F[4] Shortage of Contracting Officers F[5] Congressional mark/Rescission
.81	76%	Administrative Actions: F[36] DCMA & F[22] DCAA	F[7] OSD-Directed RMD Adjustment F[8] RFP prep delays F[10] Unrealistic/overly optimistic spend plans
.82 .70	67% 49%	Changes In Program Content: F[11] User Requirements & F[19] User Priorities F[13] Stakeholder requirements & F[19] User Priorities	F[12] Changes to program acquisition strategy F[15] Lack of decision authority F[16] Implementation of new OSD/Service policy F[17] Component Directed POM Adjustment
.71 .70	50% 49%	Contract-related Activities F[6] Contractor Proposal Delay & F[2] Contract Negotiations Delays F[3] Contract Award Delays & F[2] Contract Negotiations Delays	F[18] Awaiting reprogramming action F[20] Realistic spend plans but risks materialized F[21] Program delays from prerequisite events F[23] Unplanned Congressional adds to PB request F[25] Expenditure contingent on hardware delivery
* The higher the % the stronger the direction and strength of the linear relationship between the variables Factors # 1–3 ≥ +2σ; Factors # 4–9 ≥ +1σ Factors # 10–31 ≥ $\bar{x}$			F[26] Funding Loss: reprogramming action to higher priority requirements to PEO portfolio F[29] Shortage of Cost Estimators F[30] Shortage of business/finance personnel F[31] Programmatic conflicts between government and prime contractor

relations surfaced for factors above $\bar{x}$. User Requirements (F[11]) and User Priorities (F[19]) were correlated very strongly. In three specific instances, two factors above $\bar{x}$ were correlated very strongly with three factors that fell below $\bar{x}$: key acquisition experience (F[27]) and inadequate training (F[48]); key acquisition experience (F[27]) and tenure of PM and other key positions (F[46]); and Defense Contract Management Agency (DCMA) administration actions (F[36]) and Defense Contract Audit Agency (DCAA) administration (F[22]). Three contract-related factors (F[4], F[8], and F[9]) showed weaker correlations than expected. To learn more, we performed a regression test and found that shortage of contracting officers (F[4]) fell below $\bar{x}$ for Air Force respondents only. Specific Acquisition Categories (ACATs) also behaved as a moderating variable. RFP prep delays (F[8]) fell below for ACAT IIs only; and source selection (F[9]) fell below $\bar{x}$ for ACAT Is and ACAT IIs only. A factor having a weak correlation doesn't mean it had any less importance, but any course of action intended to mitigate the presence of any impact factor strongly correlated with another should be weighed more heavily in any recommended action. For example, the turnover of PMs could be part of the experience quotient.

Factor Plotting by Impact and Frequency
The researchers generated a scatter plot diagram (Figure 3) that punctuated how the 31 factors fluctuated between impact and frequency of occurrence. In some cases, the impact of certain factors had low frequencies of occurrence. In other cases, the frequency could be compounding the impacts.

Respondent Comments Regarding the Factors
The respondents also were asked several open-ended questions about the use of metrics they found that helped them

better meet OSD goals as well as any process improvements they would recommend. They said the metrics making a difference for them included "real-time monitoring, frequent reviews, tight coupling to contractor actions and milestones, and realistic spend plans with inch stones." As far as necessary improvements to current processes, the respondents recommended including a CRA duration variable that readjusted expectations, establishing more realistic program goals, ensuring more funding stability, reducing bureaucratic obstacles and streamlining more outdated processes, increasing cooperation between government and industry, and synchronizing disparate accounting systems used in obligation/expenditure reporting.

The respondents provided a number of qualitative comments that reinforced the quantitative data, especially for the factors above ≥ $\bar{x}$ that were causing obligation rate interference:

Personnel, Tools and Training
- "Takes too long to get Acquisition Strategies and Acquisition Plans written and approved."
- "Personnel do not have experience with the subject matter."

Contracting Activities
- "Inadequate proposals, protracted negotiations, lengthy audits, and lengthy pre-award processes."

Requirements Stability
- "Had to defer/reprioritize requirements execution into FY13 and carry forward FY12 funding into FY13 to cover cutbacks/shortfall."
- "Changes in requirements precipitated by other stakeholders' actions."

- "Ill-defined requirements."
- "User leadership routinely changes requirement and priorities."

Business Ops
- "MIPR billing process can delay expenditures from 90 to 120 days."
- "Delays in negotiating best deal for government and sometimes delays in getting acceptable proposals."

Senior Level/Executive Reviews
- "Extensive reviews, too long to get decision briefs through oversight layers—not always value added."
- "Multiple instances where milestone documentation took upward of 9 months to a year to get approved."

Funding Realities
- "The problem isn't unrealistic or overly optimistic spend plans as much as it's not knowing when funds will be appropriated and how much will be apportioned by the executing organization."

Summary

On Feb. 5, 2013, we shared the results of this study with Assistant Secretary McFarland and other key OSD senior staff.

With the metrics that Mrs. McFarland has planned to institute with Better Buying Power (BBP) 2.0, DoD will have another means to address many of the impact factors associated with this study and a host of other variables encumbering program execution expectations.

On Sept. 10, 2012, Under Secretary (AT&L) Kendall and Under Secretary (Comptroller) Hale jointly signed a memorandum that listed six tenets that could help combat some of the same factors discussed in this study regarding the disposition of DoD's unobligated funds. Over time, realization of these tenets might also reduce perception disparity gaps among the key personnel who have a hand in ensuring our warfighters continue to get the weapon systems they need—and on time—to best support our national military strategy.

Are You Ready for an International Program?

Brian Schultz

There are no words to express the abyss between isolation and having one ally. It may be conceded to the mathematician that four is twice two. But two is not twice one; two is two thousand times one.

—G.K. Chesterton

n today's dynamic acquisition environment, one could argue that every acquisition program is an international program. Our systems typically deploy overseas, our supply chain relies on parts from around the globe, our technology and security plans must consider international involvement, and our people work and operate within international organizations and coalitions.

Given this premise, an appropriate question for Department of Defense (DoD) program managers (PMs) is not whether we should pursue an international program but, rather, are the PM and program office prepared to manage it effectively?

Schultz *is a professor of program management at the Defense Acquisition University's Mid-Atlantic Region, California, Md.*

International involvement and cooperation in our acquisition programs offer many benefits, but there also are several pitfalls that should be avoided. The *Defense AT&L* September–October 2011 edition featured an article, "International Programs Contribute to Affordability." This article provides a reference for understanding the mandates for international cooperation and how we can leverage the benefits of international programs. It also describes support that is available, including training and international support organizations within the DoD.

The focus of this article is a discussion of three broad areas that often present unique issues to PMs managing international programs: (A) Cross-Cultural Acumen; (B) Managing Expectations; and (C) Robust Security and Technology Transfer Planning. These challenges may not always be at the forefront in a U.S.-only program, but they can become significant issues in an international arena.

Cross-Cultural Acumen

Cross-Cultural Acumen is vital to most international programs because, if we don't account for cultural differences, it will be difficult to establish the trust and credibility needed for such an effort. We will define this term as the ability to understand and effectively engage with people from cultures different than our own. This has been a big emphasis for the operational warfighting community, given the lessons learned from the conflicts in Iraq and Afghanistan. The nature of asymmetrical operations has transformed the doctrine of our warfighters in addressing these threats. While the operational community has established significant cultural and language resources to assist users in preparing for and in executing their worldwide missions, cultural challenges will continue to be important for the foreseeable future. Consider the following statement from retired MG Robert H. Scales Jr. in testimony before the Senate Armed Services Committee (SASC) on April 25, 2007:

> So far, we have spent billions to gain a few additional meters of precision, knots of speed, or bits of bandwidth. Now we must commit resources to improve how the military thinks and acts in an effort to create a parallel transformational universe based on cognition and cultural awareness.

This ability to work through cultural issues also is important in international acquisition. It's important for us to remember that our international partners most likely come from cultures different than ours. They may not understand our processes, regulations, policies, and laws that often constrain what we are able to do. Likewise, we often don't understand some of the national constraints they have. This means that, though we initially might assume that others will view program issues and content as we do, this is not necessarily true. This difference in our program "lens" has significant implications not only in how we interact with our partners but also in how it affects the content of acquisition products.

A good example is the design of an operator training program for a Middle Eastern country's air force. Our model for training U.S. Air Force operators would involve a course that has a sequence based on our cultural learning. It typically would be very structured and follow a linear sequence of instruction with little or no time allocated for building personal relationships. On the other hand, a Middle Eastern country's preferred sequence of learning may involve a more circular model based on how its culture interacts and learns in a group setting. The time for relationship building should come before any serious business is conducted. If these differences are not addressed, how effective would you expect our typical training course to be when delivered to these allies? I observed a pretty large program that essentially was stopped for a few years due to cultural ignorance that eroded trust. Regaining this trust and credibility is not easy.

One practice I found helpful was a formal program stakeholder analysis. This effort can provide great insights into what interests the key partner stakeholders and what drives them. Don't assume that the new foreign professionals will have the same interests and motivations as their predecessors. Getting to know these foreign partners and understanding their processes, needs, and priorities are crucial in getting win-win outcomes. A valuable resource you can tap is the in-country Security Cooperation Office that often works very closely with host nation officials and their staffs. The country desk officer at the Defense Security Cooperation Agency or your Service International Program Office also is a great place to start if you are dealing with a new partner.

Like the operational community, our international acquisition teams should be trained and equipped for cultural skills relevant for their program. There are many resources within the DoD that teams can leverage to help with cross-cultural acumen. These resources include courses, research papers, briefings, subject matter experts, and other tools that are often readily available. An Air Force website (http://www.au.af.mil/culture/usgov.htm) includes links to DoD sites as well as other federal agency sites that address language and culture resources.

Years ago I attended the Cross Cultural Communications Course at the Air Force Special Operations School at Hurlburt Field, Fla., and found it to be a valuable tool in helping me prepare for international interactions. In hindsight, it would have been great to get some cultural training like this course as part of the new-hire orientation. Later, our program office instituted a mandatory "in-house" orientation for new staff that included some basic cultural awareness topics. It helped us avoid many previous bumps in the road, some of which were significant.

Managing Expectations

Managing the expectations of key stakeholders is important in any acquisition but arguably even more important for international efforts. It helps to foster teamwork, achieve stakeholder buy-in, and avoid surprises that can erode credibility and customer relationships. One tool commonly used is an Expectation Management Agreement (EMA). My experience

in the Air Force suggested that programs lacking these agreements often had customers who were not happy with outcomes, even though the outcomes were exactly what we had planned to achieve. For example, a previous international customer of Electronic Systems Center (ESC) expected a radar to have much greater coverage volume than was possible, given the site installation and mountainous terrain. The customer was not pleased with the test results, even though the radar exceeded its performance specifications.

In hindsight, this issue could have been addressed much earlier by using computer models and discussions on expected performance in the field, making sure the customer knew what was planned, based on site and radar performance constraints. Avoiding this kind of disconnect is a lot easier if the key parties to the acquisition clearly understand what will be provided and when.

Given that most international programs span several years, establishing an EMA for each fiscal year will help ensure that the international team understands what key deliverables are planned in the near future. This also is important for those activities where the allies' help is required, often crucial to site preparation and deployed test activities in-country.

The EMA we used several years ago while at ESC was an Execution Plan (also known as "X-Plan"). The X-Plan was a very concise document that outlined the key deliverables for that fiscal year. It also included funding, on-time schedule delivery dates for each deliverable, and stretch-goal dates that the team would pursue, as appropriate. Finally, it also addressed risks and risk management efforts that would be managed to help ensure the deliveries were achieved and met the user requirements. The X-Plan was used as the basis for status updates to both our allied partners and our Air Force chain.

Some may question why we needed an EMA with our international partners since we also had an approved Letter of Offer and Acceptance (LOA) or an International Agreement (IA). The answer is that LOAs and IAs are very broad and don't typically include many details, other than a program or project period of performance. Providing our partners greater insight on what will occur in the near-term keeps them better informed and helps them better manage their part of the program.

Another tool we used to manage expectations of allied partners for participation in future upgrades was the Common Needs Analysis (CNA). The CNA process was developed by our team in response to questions from and interest expressed by our partners in what future capabilities are being developed by the Air Force and what opportunities exist for participation. As part of the CNA, we developed a tool that indicated the future plans and priorities of each participating nation and highlighted areas where there was potential alignment. Once those opportunities were identified, teams could meet to see if there was enough alignment of requirements, funding, and schedules to pursue a cooperative or collaborative effort (including potential foreign military sales efforts). This process not only helped identify potential cooperative and collaborative opportunities but also facilitated better disclosure and technology transfer planning.

Rough Order of Magnitude (ROM) cost estimates are another area where we often encounter problems. The international partner will require some sort of ROM or budgetary estimate to obtain their national approval for the program. They often will ask the program office to provide the ROM with some basic assumptions on timeframe of the procurement, quantities, and capability required. The program office may get an estimate from the contractor. U.S. government costs are then added in, and the ROM is provided. So what's the problem?

Unfortunately, when we go to execute the program, the actual budget required often is higher than the ROM we provided. This situation can make life very difficult for our partner, especially if the cost difference is significant and the allied PM must go back and ask the national parliament or other authority for more money. It also damages our credibility and can hurt the relationship with the country if this is not managed well. Note that even though we may include several caveats to the ROM, the foreign partner can forget quickly and may believe this ROM number is locked in as a Not to Exceed (NTE) budget for the program.

So, given this dilemma and the potential consequences, perhaps we should treat these ROMs as NTEs. This means we may need to adjust our estimate so we have a high degree of confidence in executing within the original ROM. Another good practice is to lay out the minimum elements of information necessary to provide a ROM rather than make assumptions about what the partner nation needs. This back-and-forth

dialogue may take additional time up front in the planning process but is well worthwhile, based on my experience. It is not a good option to have to delete scope and capability in order to stay within a budget that was based on a "loose" ROM. It's also a good idea to remind the contractor that we expect to execute to the ROM or less, but not higher.

Robust Security and Technology Transfer Planning

Planning for and executing an international program can be a challenging endeavor. It will be even more challenging if the program office does not adequately plan for the security and technology control considerations that govern these programs. While each Service has some unique procedures in reviewing and approving security and technology transfer issues, the processes address the same issues and considerations. These issues include but are not limited to questions such as:

- Does the program have a current security classification guide? If not, is the security manager engaged and working it as a priority?
- What is the Critical Program Information (CPI) for this program, and how will we protect it?
- What is the feasibility of international participation, and who are the likely players?
- What kinds of technology transfers/disclosures are envisioned, and what is the timing? Who needs to approve the releases and when?
- What Controlled Unclassified Information (CUI) is associated with this program? Have we established procedures to protect the CUI?
- Is the cognizant Foreign Disclosure Office aware of our planning/actions, and is it engaged in developing a Delegation of Disclosure Authority Letter to enable timely release decisions?

Generally, security issues should be given priority since the types of information involved in an acquisition program will drive subsequent decision paths and program planning. For example, if your program involves classified data, this will drive decisions on participation and required protections. The CPI must be identified early so the appropriate controls are established to protect the CPI. Documents such as the security classification guide, program protection plan, and technology assessment/control plan should be developed as soon as practical. Also note that program protection planning is a requirement for all programs, not just international programs.

Some of the recent changes in the acquisition landscape have increased the challenges in security and program protection planning. Consider that we now rely on a global chain comprised of suppliers that provide approximately 60 percent to 70 percent of the system components to the system-level prime contractor. The supply chain threat can be resident several layers down from the prime contractor. Understanding and evaluating your program's supply chain is important and should be part of a vulnerability analysis to identify potential threats and countermeasures.

The expanded use of networks, commercial off-the shelf (COTS), and software-intensive systems creates unique security challenges. Our systems, operations, and infrastructure all rely heavily on networks that process our most sensitive information. Protecting against malicious code and intrusions to our networks continues to be a nagging problem. We have learned and relearned that malicious code easily can be introduced into our systems and networks if we are not vigilant and don't design in the system security in both our system design and processes.

A recent example of an international program that appears to be plagued by security and technology transfer issues is the sale of U.S.-made Javelin anti-tank guided missiles (ATGMs) to India. A *Defense News* article (Oct. 8, 2012) discusses how the proposed $800 million sale may be in jeopardy while the technology transfer has been "lying on the shelf" awaiting government export approval. The article states that while the U.S companies want to make the export sale, U.S. authorities have not cleared the proposal. The security and technology transfer planning either was late to start or not very effective in getting the upfront approvals. It appears that India will look elsewhere from other countries' systems to fulfill this need.

Another recent story in *Defense News* ("Pentagon Stop Work Order Adds to French Aircraft Cost," Sept. 24, 2012) outlines the seriousness of program protection. A Foreign Military Sales (FMS) contractor was directed to stop work on a major system mission computing upgrade because "program protection issues" needed to be resolved before the system could be exported. The cost impacts of this stop-work will be borne by the FMS customer and obviously the cost, schedule, and other program parameters will be impacted. While additional details are not clear as to how or why this occurred, PMs must ensure that their security and technology control plans are vetted and approved by the right authorities, or early or significant impacts like these can occur.

Final Thoughts

International programs offer many benefits to DoD but also have unique aspects and risks that must be addressed. The days are over of separate U.S. and international programs. And issues like culture, managing expectations, and security will affect nearly all our acquisition programs. PMs and their teams must not only consider international participation but the international threats and countermeasures to protect our technology and critical program information. As with nearly everything else in acquisition, PMs are the key players to make it happen. The good news is that PMs can leverage lots of help in this area but should make it a priority and seek the help early in their programs' life cycles.

*The author can be contacted at **Brian.Schultz@dau.mil**.*

Defense ARJ and *AT&L* have become online-only publications for **individual subscribers**

If you would like to start or continue a membership with *Defense ARJ* or *AT&L*, you must register a valid e-mail address in our **LISTSERV**

All Readers: Please subscribe or resubscribe so you will not miss out on receiving future publications.

- Send an e-mail to darjonline@dau.mil and/or datlonline@dau.mil, giving the e-mail address you want us to use to notify you when a new issue is posted.
- Please type "Add to LISTSERV" in the subject line.
- Please also use this address to notify us if you change your e-mail address.

28
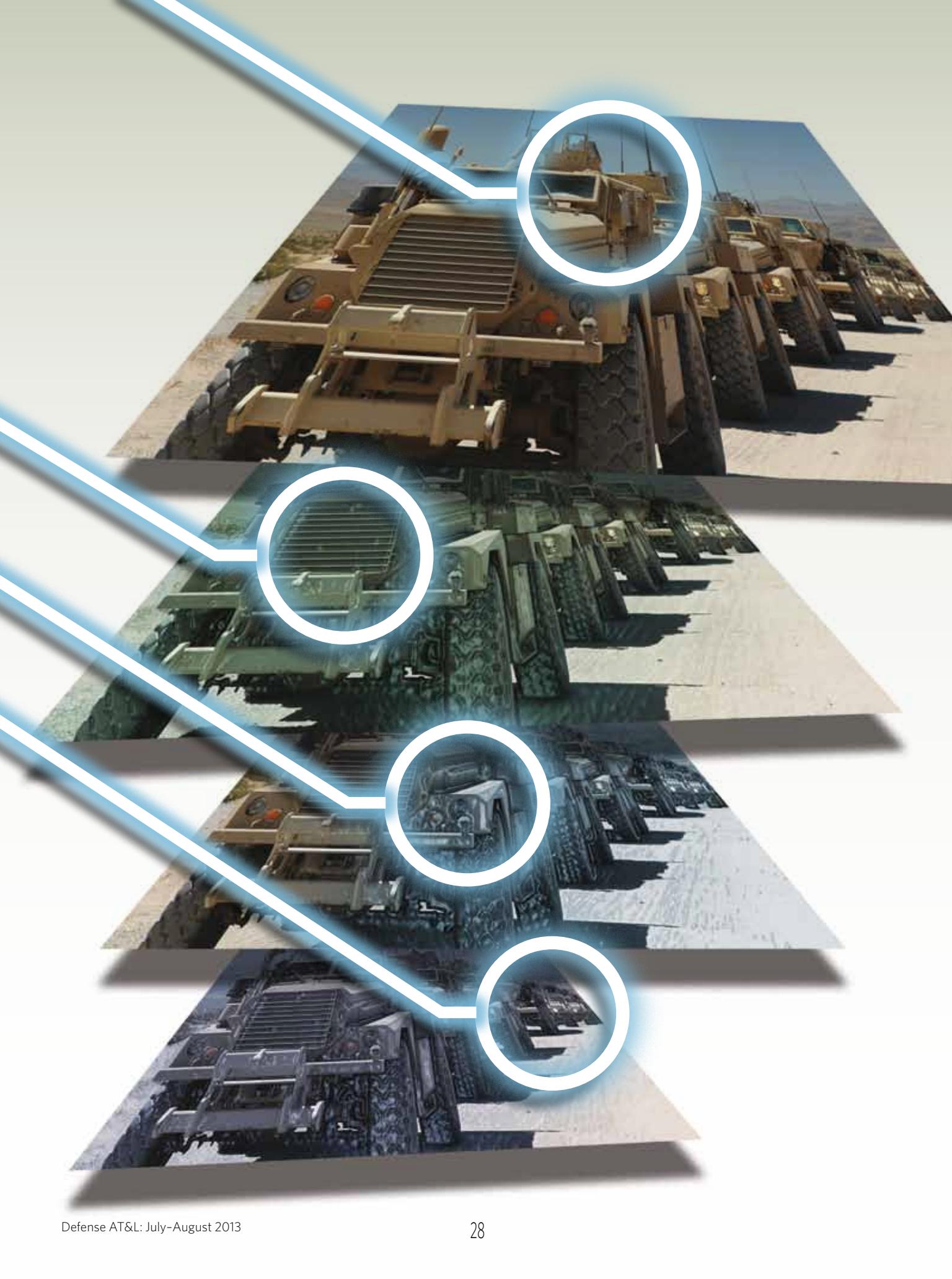
A Reliability Approach

to Risk Assessment and Analysis of Alternatives
(Based on a Ground-Vehicle Example)

Shawn P. Brady

Based on historical data, a large percentage of U.S. military systems struggle to achieve their reliability requirements, resulting in significant penalties, such as decreased system availability, increased life-cycle costs, and schedule delays. These impacts are all applicable to studies of Risk Assessment and Analysis of Alternatives (AoA)—which assess technical, schedule, and cost risks. In order to effectively analyze the reliability risks for programs of interest in a Risk Assessment or AoA, a new approach has been developed.

The recently adopted approach consists of four separate techniques that can be used individually or collectively to inform decision makers and positively improve defense acquisition:

1. Assess the reliability estimates of similar systems to gauge the feasibility of the reliability requirement and the likelihood of achieving it.
2. Conduct an assessment using the U.S. Army Materiel Systems Analysis Activity (AMSAA) Reliability Scorecard to determine the adequacy of the overall reliability program through a quantitative risk score.
3. Create a realistic Reliability Growth Planning Curve (RGPC) using AMSAA's Planning Model based on Projection Methodology (PM2) and gauge the associated risks using AMSAA's RGPC Risk Assessment Matrix.
4. Examine the impact of the reliability requirement on test duration and Operations & Support (O&S) life-cycle costs.

The four techniques are not new. In fact, they are used and widely accepted for planning and managing reliability programs. However, systematically applying these effective techniques to improve the Risk Assessment and AoA process is new. This article presents the four techniques and applies each of them to a notional AoA for a ground vehicle program. It is important to note that executing each of the four techniques may not be possible for every study, as it will depend on the extent of available reliability information for the proposed and alternative systems. In such cases, the analysis should include only the techniques that can be performed.

Brady *is an operations research analyst in the Center for Reliability Growth of U.S. Army Materiel Systems Analysis Activity at Aberdeen Proving Ground, Md.*

Requirement Feasibility

The first technique gauges the feasibility of the reliability requirement and the likelihood of achieving it by assessing the reliability of similar systems. According to the Defense Acquisition University's (DAU) *Glossary of Defense Acquisition Acronyms and Terms,* reliability "measures the probability that the system will perform without failure over a specified interval under specified conditions. Reliability must be sufficient to support the warfighting capability needed in its expected operating environment." Therefore, when applying this technique to Risk Assessment and AoA, it is important to consider any differences in capabilities and operating environment that exist between the proposed and alternative systems.

It is unlikely that the proposed system will have all the same capabilities as each of the alternative systems. Technological advancements, along with the Department of Defense (DoD) need to adapt to the ever-changing threats on the battlefield, result in the development of systems with enhanced capabilities. These may include capabilities such as increased power, added protection, increased payload, reduced fuel burden, and improved Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) systems. Any differences should be identified between the proposed and alternative systems in terms of capabilities and technologies, as well as their associated Technology Readiness Levels (TRLs), Manufacturing Readiness Levels (MRLs), and Integration Readiness Levels (IRLs).

It also is unlikely that the proposed system will have the same operating environment and usage as each of the alternative systems. There also should be identification of any differences between the proposed and alternative systems in terms of environment (such as terrain, temperature, and weather), tasks that the system must complete to accomplish its mission, and the definition and classification of failures. Once the differences in capabilities and operating environment are identified, the reliability requirement for the proposed system should be compared to that of the alternative systems in order to gauge its feasibility.

Using the example AoA, Figure 1 shows that the proposed system has a 148-hour Mean Time Between Failure (MTBF) requirement, which is within the range of the requirements for the alternative systems. Upon further investigation, it is determined that the proposed system will have a few additional capabilities in comparison to the alternative systems. However, the elevated risk of achieving the required MTBF with the additional capabilities is offset by the fact that the required usage environment for the proposed system (mostly primary roads) is not as harsh as that of the alternative systems (mostly secondary roads). Therefore, it can be determined through the first technique that the technical risk associated with achieving the MTBF requirement is fairly low.

AMSAA Reliability Scorecard

The AMSAA Reliability Scorecard initially was developed to provide a mechanism for consistently and effectively conducting early engineering-based reliability reviews to alert key Army leaders when weapon systems are off track with respect to meeting their reliability requirement. Typically, the Scorecard is used to examine a program's use of reliability best practices, based on the planned and completed reliability tasks, to assess the adequacy of the overall reliability program. However, the Scorecard is a comprehensive evaluation tool that is not limited to early engineering-based reviews. Instead, the Scorecard is applicable to engineering activities that occur during all phases of the life cycle, making it a useful tool for Risk Assessment and AoA.

The AMSAA Reliability Scorecard contains 40 elements grouped into eight critical categories. Based on each element's criteria, a rating of high risk, medium risk, low risk, or "Not Evaluated" is assigned to each of the 40 elements. The ratings are used to calculate a risk score for each of the eight categories, as well as an overall risk score for the program. The scores are normalized to a 100-point scale, where 100 is the highest risk. Elements that are not applicable to the program should be rated Not Evaluated, which removes them from the calculations. After assigning a level of risk to each of the 40 elements, the analyst should provide suggestions to decrease the risk for each of the medium- and high-risk elements. Next, cost and schedule estimates should be made to determine the programmatic impacts of executing

Figure 1. Assessing the Reliability of Similar Systems
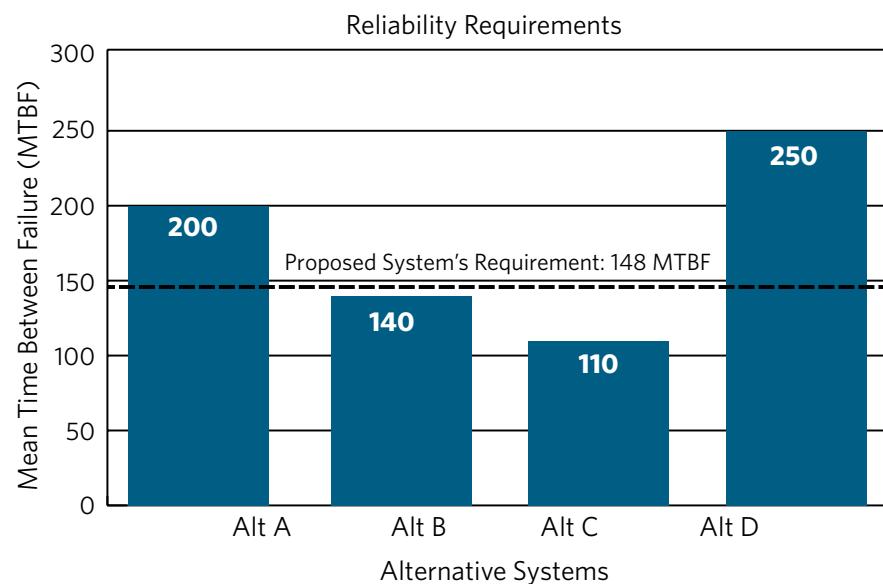
the recommended activities. An example Scorecard element is shown in Figure 2.

The AMSAA Reliability Scorecard can be used for systems composed primarily of hardware, as well as those composed of both hardware and software. The AMSAA Software Reliability Scorecard was developed recently to evaluate reliability programs for software-intensive systems. Both Scorecards allow for identification of risks associated with achieving the reliability requirement, and they highlight critical activities that a program should execute to increase the likelihood of reliability success.

Continuing with the notional AoA, the second technique is executed to identify the risks associated with achieving the reliability requirement and the cost and schedule impacts associated with mitigating those risks. According to the completed Scorecard assessment, the program has an overall risk rating of 56, which is in the medium-risk range. The assessment indicates that the developer committed minimal resources toward Design for Reliability (DfR) activities such as Failure Modes, Effects, and Criticality Analysis (FMECA), Finite Element Analysis, and thermal and vibration analysis. Based on knowledge from previous defense acquisition programs, it is estimated that this program would need to dedicate roughly 18 months to effectively execute these DfR efforts and incorporate the necessary design changes into the proposed system prior to entering formal, system-level reliability growth testing.

Therefore, if program management decides to push forward with the current design, the AMSAA Reliability Scorecard indicates that the technical risks associated with achieving the reliability requirement are medium. However, if program management is willing to make a strong commitment to executing the appropriate DfR best-practices and is willing to incur an 18-month schedule delay, then the technical risks could be mitigated.

Reliability Growth Planning Curve

Reliability growth planning addresses program schedules, amount of testing, resources available, and the realism of

achieving and demonstrating the reliability requirement. To plan for and manage reliability growth, programs develop a Reliability Growth Planning Curve (RGPC) and establish the necessary supporting activities. One of the reliability growth planning models commonly used by the Army and DoD is AMSAA's Planning Model based on Projection Methodology (PM2). PM2 is an Excel-based mathematical model used to formulate a detailed reliability growth plan for a complex system under development. The plan is represented in the form of a system-level RGPC that incorporates the reliability requirement, test schedule, and management's corrective action strategy. If an RGPC using PM2 has not already been developed for the system, one should be developed using realistic planning parameters.

When analyzing reliability for Risk Assessment and AoA, the use of PM2 is particularly beneficial. Additionally, AMSAA's RGPC Risk Assessment Matrix should be used to assess the risks associated with the planning parameters. The matrix includes 10 elements relating to the RGPC, with low-, medium-, and high-risk criteria associated with each element. The appropriate risk level should be assigned to each of the 10 elements, based on the RGPC and the system's reliability

> **Technological advancements, along with the DoD need to adapt to the ever-changing threats on the battlefield, result in the development of systems with enhanced capabilities.**

Figure 2. AMSAA Reliability Scorecard

Category	#	Element	High-Risk Criteria	Medium-Risk Criteria	Low-Risk Criteria
Reliability Analysis	15	Comprehensive thermal and vibration analyses and/or finite element analyses (FEA) are conducted to address potential failure mechanisms and failure sites.	No thermal or vibration analyses or FEA are conducted.	Design may be modeled. Boundary conditions are determined from higher-level models or measured data. Vibration response may not be measured in multiple locations or in all appropriate axes. Limited FEA may be carried out. Some thermal or vibration objectives will not be met.	Design is modeled for thermal and vibration characteristics. Boundary conditions are determined from higher-level models or measured data. Special items and operating conditions are modeled. Vibration response is measured in multiple locations in all appropriate axes. FEA is performed on structure. All thermal and vibration objectives should be met.

Figure 3. PM2 Reliability Growth Planning Curve
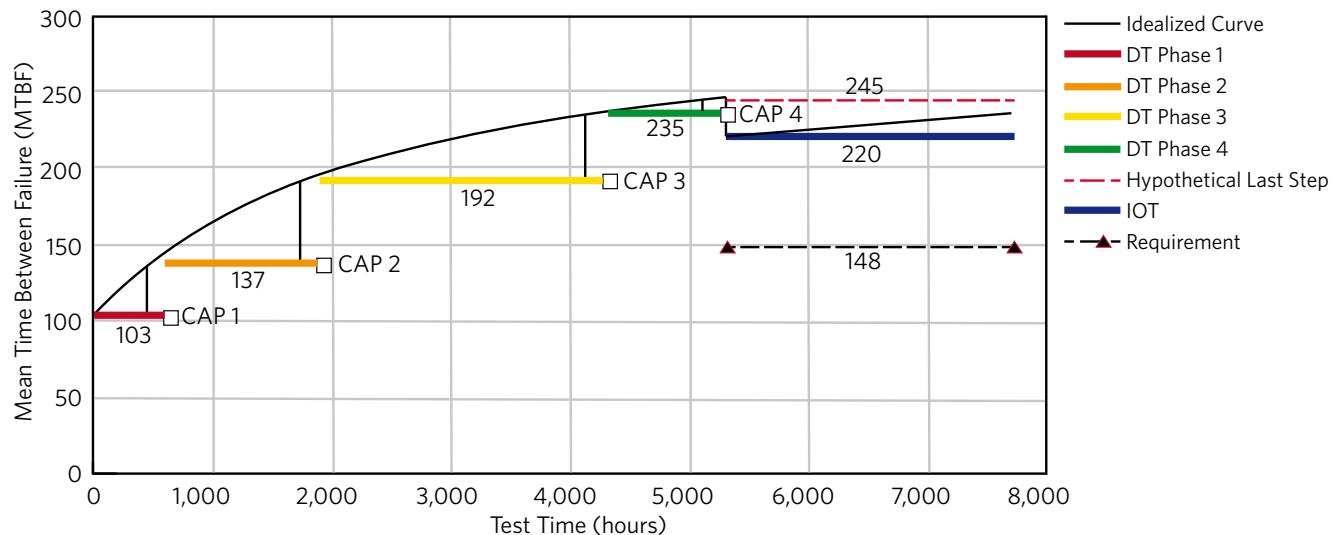
growth program. If several elements receive medium- or high-risk ratings, it may be unlikely for the system to achieve the reliability goals established by the RGPC. In such cases, a new, more achievable RGPC should be developed so most of the elements in the risk matrix yield low-risk ratings. Then a comparison should be made between the original RGPC and the new RGPC to determine the estimated schedule impacts associated with the new plan.

The reliability analysis for the notional AoA continues by applying the third technique to gain additional insights into the proposed system's risks. Figure 3 depicts the vendor's proposed RGPC for its developmental system, which has been determined to be low risk using the RGPC Risk Assessment Matrix. As indicated by the RGPC, the system is required to enter system-level reliability growth testing with an initial MTBF of 103 hours to have a realistic chance of achieving the 245-hour MTBF Goal at the end of Developmental Testing (DT). However, lower-level component testing and reliability block diagram estimates indicate that the system may only have an initial MTBF of 30 hours, which is significantly shorter than the planned value of 103 hours.

By identifying the system's low likelihood of "getting on the curve," it can be concluded that the program's current plan yields high risks. To mitigate these risks, a more realistic RGPC should be developed that incorporates the expected initial MTBF of 30 hours. However, according to the RGPC Risk Assessment Matrix, the goal MTBF in DT (which is 245) should be no more than 3 times the initial MTBF (which is 30). Therefore, the current 30-hour initial MTBF is too low to generate a realistic RGPC. In order to mitigate the high risks and satisfy the criteria in the RGPC Risk Assessment Matrix, it is critical for the program to achieve the planned 103-hour initial MTBF. To accomplish this, program management must be dedicated to conducting a major DfR effort that includes substantial redesign of one or more subsystems in order to

mitigate large classes of failure modes. This is the only way for the system to "get on the curve."

Using the insights gained from techniques 1 through 3, the following conclusions can be made thus far:

- The 148-hour MTBF requirement is appropriate for the system.
- The developer did not dedicate the appropriate resources toward DfR activities, which would result in an 18-month schedule delay were program management to perform those activities.
- For the program to have a low-risk plan, an initial MTBF of at least 103 hours is needed. Therefore, the 18-month investment in the DfR activities identified by the Scorecard is essential.

Impact of Reliability on O&S Costs

The fourth and final technique is to examine the impact of the reliability requirement on test duration and O&S life-cycle costs. According to the June 2010 Office of the Secretary of Defense (OSD) Memo State of Reliability, "Sustainment costs have 5 to 10 times more impact on total life-cycle costs than do Research, Development, Test, and Evaluation (RDT&E) costs. Poor reliability leads to higher sustainment costs for replacement spares, maintenance, repair parts, facilities, staff, etc." Achieving a higher MTBF requires additional test time for DfR activities and DT reliability growth test events. However, the associated payoff of the additional testing is not just improved system reliability, but also reduced O&S costs for the life cycle of the system.

When conducting reliability analysis for Risk Assessment and AoA, a sensitivity analysis on the reliability requirements should quantify the financial impact that various levels of system reliability will have on the program's life-cycle costs. To achieve the estimated O&S costs, the Selected Essential-Item

Stock for Availability Method (SESAME)-based Consumption, Holding, Repair, and Transportation (COHORT) model can be used. The model provides cost analyses by using existing consumable- and repairable-part input data that are tailored to a particular system. COHORT computes the expected life-cycle costs of the enterprise's supply and maintenance system that will be supporting the weapon system/end item throughout its useful life. For Risk Assessments and AoAs, the cost and schedule impacts of reliability testing are important, but equally important are the O&S life-cycle costs associated with the system's reliability.

To complete the reliability analysis for the notional AoA, the fourth technique is utilized to determine the impact that lowering the MTBF requirement (or achieving a lower MTBF goal) would have on DfR and DT duration and on O&S life-cycle costs. As shown in the top row of Figure 4, if the proposed system had an MTBF requirement of only 103 hours, no system-level reliability growth testing would be needed, as long as the system undergoes the 18 months of previously mentioned DfR activities. The O&S life-cycle costs associated with the 103-hour MTBF would be about $1.5 billion.

If, on the other hand, the system's MTBF requirement remained at its current value of 148 hours, the O&S costs would be $1.0 billion. However, 18 months of DfR and 5 months of system-level reliability growth testing would be needed, for a total of 23 months. If the system's MTBF requirement increased to 225 hours, and again to 300 hours, the O&S costs would be further reduced. However, achieving these higher MTBF requirements would require program management to

Figure 4. Requirements Sensitivity Analysis

MTBF Requirement (in hours)	Test Duration (in months)	O&S Costs (in $M)
103	18	$1,550
148	23	$1,075
225	30	$ 720
300	40	$ 510

commit additional time to conduct DfR activities and system-level reliability growth testing.

Conclusion

Many military systems struggle to achieve their reliability requirements, resulting in decreased system availability, increased life-cycle costs, and schedule delays. The proposed approach for Risk Assessment and AoA includes four techniques for identifying and assessing a program's reliability risks. Whether used individually or collectively, these techniques can inform decision makers and positively improve defense acquisition.

Elements of this approach have been used to support the Armored Multi-Purpose Vehicle (AMPV) AoA, Bradley Cost Benefit Analysis, and the Deployable Force Protection Radar Study. This approach also is being incorporated into the Ground Combat Vehicle (GCV) AoA.

The author can be contacted at **shawn.p.brady.civ@mail.mil**.
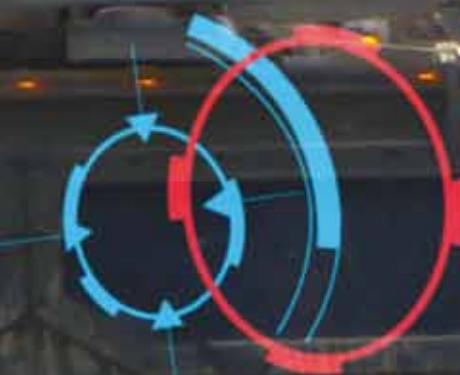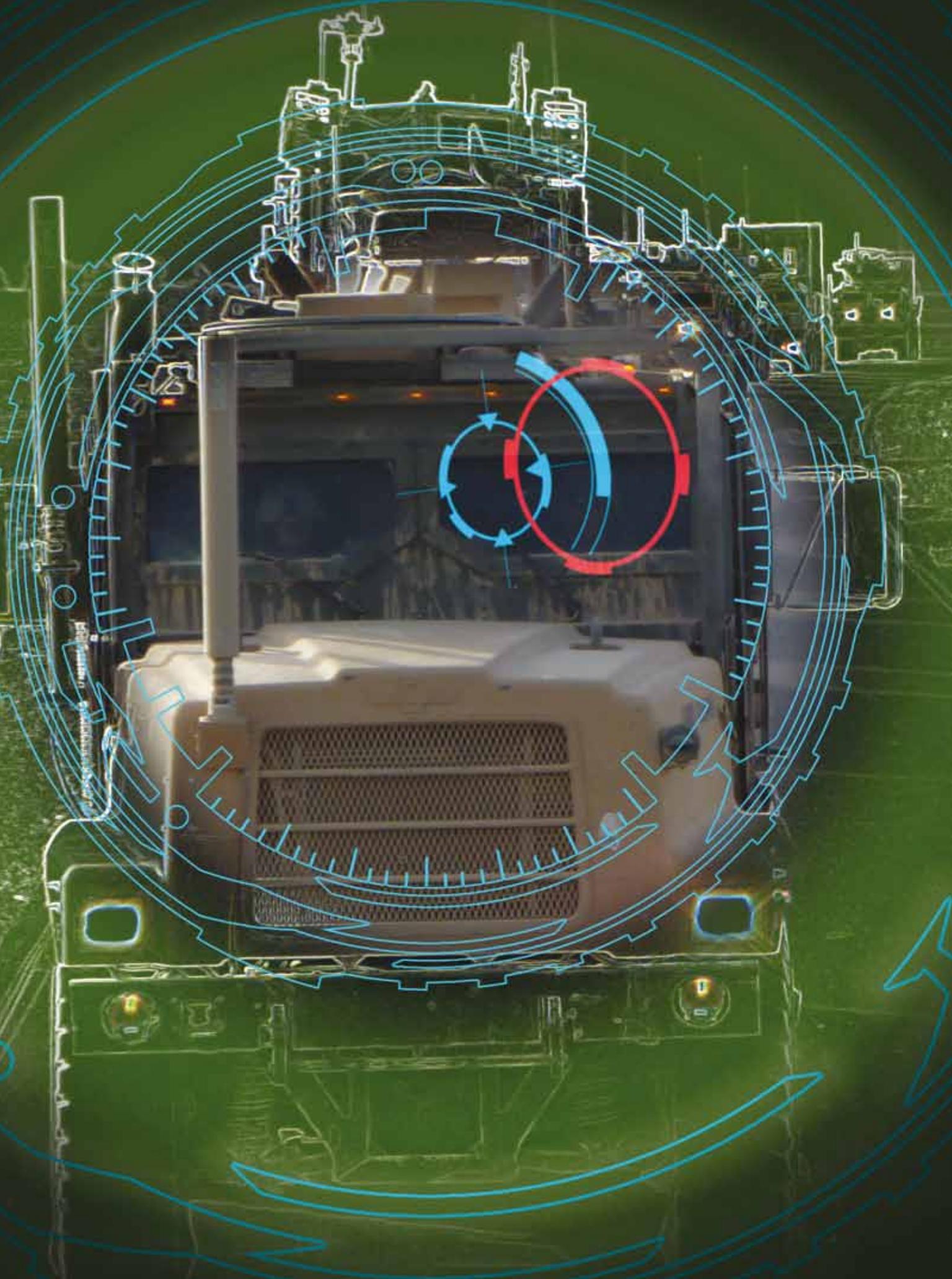
Rolling Toward
Better Buying Power 2.0

and Portfolio Management with the Joint Center for Ground Vehicles

Daniel Pierson

hen it comes to acquisition, it's safe to say affordability is foremost on the minds of defense policymakers and decision makers today. Achieving greater efficiency and productivity in defense spending is the focus of the acquisition community now and far into the future. This will require acquisition stakeholders and decision makers to come together at the enterprise level to maximize shrinking resources as well as leverage knowledge to make

Pierson is deputy program executive officer for Land Systems (Marine Corps).

> **Too much valuable information gets lost in the translation as a product is staffed through Service staffs en route to USD(AT&L), not to mention the time lost.**

more informed decisions to produce better results for the warfighter.

It is in this context that the Joint Center for Ground Vehicles (JCGV) was undertaken just 3 years ago. The key to making the JCGV work will be how it is governed. We must bring the stakeholders and decision makers together to make more informed decisions at the enterprise level, maximizing available resources and knowledge.

Before explaining the JCGV construct and the benefits it can and will provide, one must first understand the benefits afforded under the Program Executive Officer (PEO) construct. The PEO construct in my opinion has been and will always be at the core of how to best manage large to small acquisition program portfolios. Unfortunately, as I see it, the PEO construct has been underutilized by senior leaders at all levels. These are organizations that each manage billions of dollars across the Fiscal Year Defense Plan and seldom get pulled in to share their knowledge and experience of what is working and what isn't. Historically, the tendency of senior leadership has been to focus on individual programs after problems have occurred. In doing so, valuable context can be lost when looking only at a single program, thus preventing a candid assessment of the complete problem set. A PEO can provide a much more holistic problem definition and broader solution sets across his or her portfolio when they are outlined in the context of the entire portfolio vs. a single system.

The Better Buying Power 2.0 initiatives (BBP 2.0) of Under Secretary Kendall now are looking at programs in the context of the entire portfolio for which an individual system resides cross-Service, with a focus on life-cycle affordability, and an

eye toward eliminating duplication of efforts. For this reason, I have faith that BBP 2.0 is on the right track.

I was working on the Joint Staff when the department was getting serious about portfolio management. We struggled to figure out how to manage from the Pentagon such large joint portfolios such as the Command, Control, Communications, Computers, Intelligence, Surveillance an Reconnaissance (C41SR) portfolio without standing up huge organizations to do so. We also realized the majority of information and subject matter expertise required to do portfolio management resided within the Services where the work is done. It was when I became a deputy PEO that the lightbulb turned on. PEOs routinely do portfolio management as a normal course of their daily duties.

Senior leaders of the Pentagon must learn how to harness this inherent capability they themselves have chartered PEOs to do and roll it up to a more corporate level. This would require that members of individual Service headquarters staffs trust, and work closer with, their USD(AT&L) counterparts than is the case today in order to more effectively share information in a timely manner. Too much valuable information gets lost in the translation as a product is staffed through Service staffs en route to USD(AT&L), not to mention the time lost. Not trivial, but doable and very much needed if BBP 2.0 is to achieve its full potential.

By having the understanding of what a PEO is and does, one can begin to understand why the JCGV construct is a powerful model—a model that could be applied to various other PEOs with "like" or related portfolios, a model that if employed could provide the building blocks for USD(AT&L) to have the ability to do portfolio management at the departmental or corporate level. After all, it is the PEOs who provide the routine direction and oversight of their assigned program managers (PMs) and have the most influence over their programs' success. Across and within the PEOs is where the majority of data and lessons learned exists from which to make meaningful change. To reach their full potential, the JCGV model and BBP 2.0 demand better communication and routine collaboration from USD(AT&L) through the Services to the PEOs and back to the USD(AT&L) without the laborious staffing processes currently established by each of the Services' headquarters. A certain amount of trust and some ground rules must be developed to allow this level of collaboration.

Introducing the Joint Center for Ground Vehicles

Born from a "grass-roots" effort as a Joint Service construct, the Army-Marine Corps JCGV was launched 3 years ago by the organizations responsible for development, acquisition, and sustainment of the ground vehicle fleet. Today, the JCGV has the ability to provide a single authoritative voice in the ground vehicle community that could truly benefit the Department of Defense (DoD) and its industry partners by increasing efficiency, reducing costs, and synchronizing technology

development—ultimately, with the goal of improving the ground vehicle system development and acquisition domain across both the Army and the Marine Corps.

A key tenet of the JCGV is that it was formed from existing organizations and infrastructure with no additional layers of oversight. The JCGV does not exist in a physical building or change any existing authorities, but accomplishes its mission through open centralized collaborative governance, integrated planning and portfolio management, systems integration, technical expertise, and resource and data sharing. It exists throughout its founding organizations and infrastructure with a center of mass at the Detroit Arsenal, the nation's Joint Center of Excellence for Ground Vehicles. The JCGV puts a deliberate focus on cross-cutting issues and synchronized technology development across the Army and Marine Corps ground vehicle efforts. This effort greatly enhances the technical community's ability to support our programs of record due to the sense of priorities and needs identified by the Governance Board.
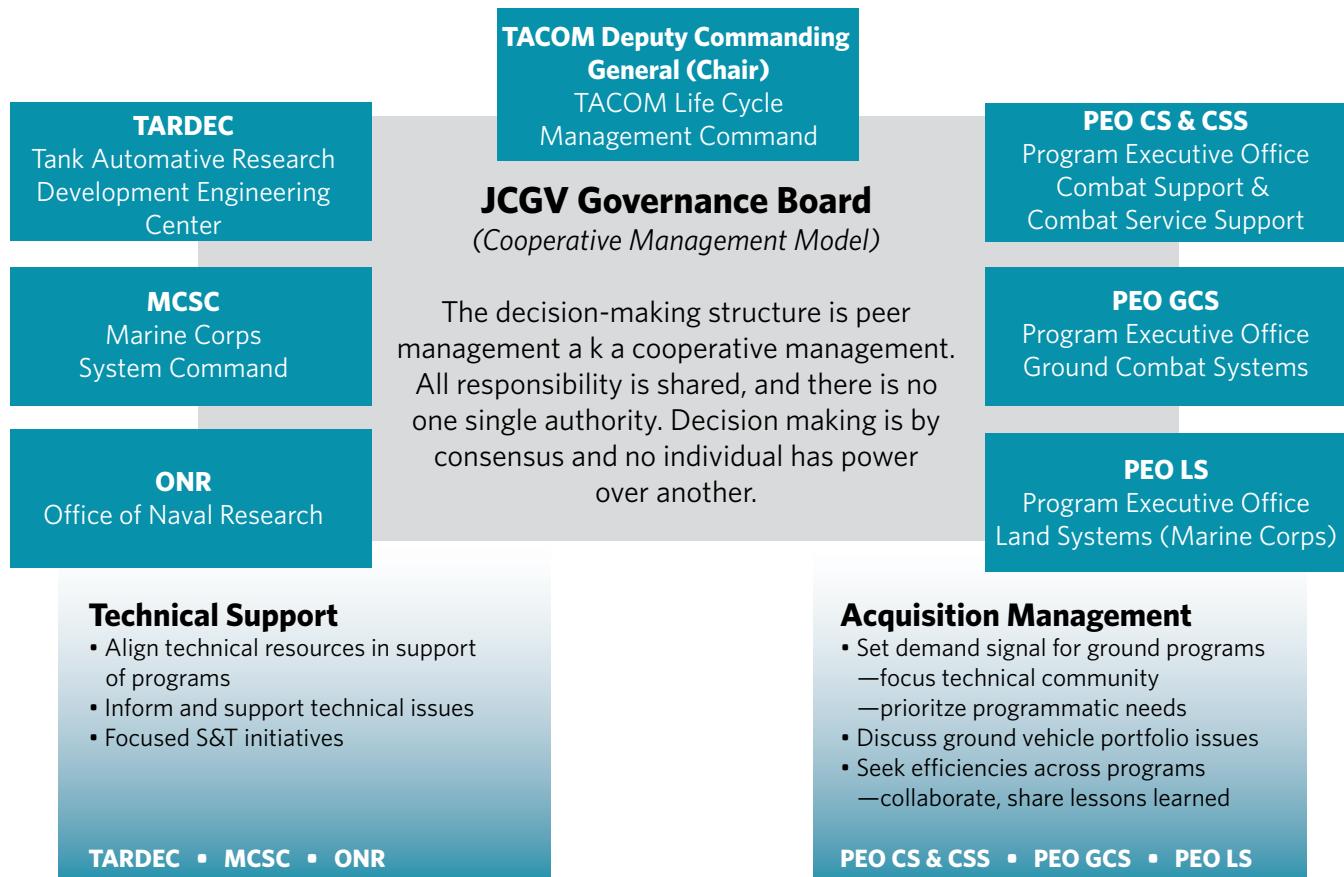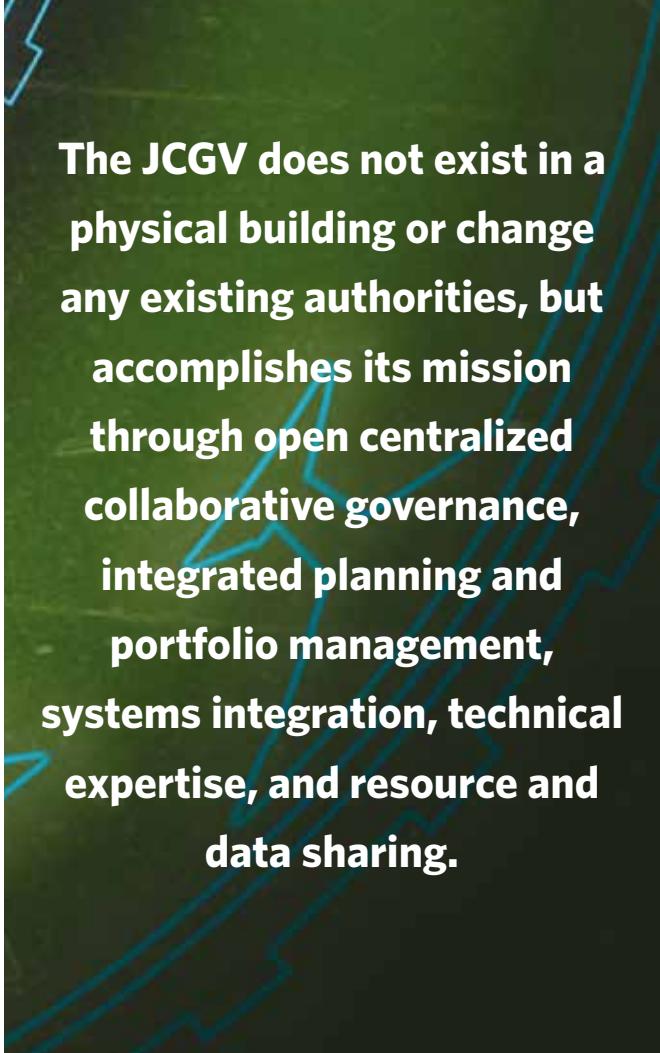
The JCGV Governance Board

The key to the JCGV is the makeup of the Governance Board that guides and directs both the acquisition and technology communities in support of ground vehicle development (see Figure 1). The board is comprised of senior leadership from these organizations: PEO Ground Combat Systems (PEO GCS), PEO Combat Support & Combat Service Support (PEO CS &

CSS), PEO Land Systems (Marine Corps) (PEO LS), Tank Automotive Research Development Engineering Center (TARDEC), Marine Corps Systems Command (MCSC), Office of Naval Research (ONR), and TACOM Life Cycle Management Command (TACOM LCMC) as the governance board chair. The makeup of this board that meets quarterly with both acquisition and technical leaders will better align technical efforts from across the Joint community to programs of record, providing checks and balances impacting investment decisions. The board attempts to ensure member organizations function as an enterprise, looking at commonality across platforms and services, and developing shared analytical services in systems engineering processes that result in accelerated acquisition. The JCGV does not manage individual acquisition programs or limit existing authorities or responsibilities of the Services; rather, it reduces costs and better aligns resources and initiatives. The board attempts to align the technical efforts across the joint community to match up with Programs of Record (PORs). By placing a deliberate focus on cross-cutting issues that in the past were handled in "stovepipes," we now are providing essential checks and balance that impact investment decisions.

There have been numerous examples in the past few years where industry has directly engaged at the most senior levels of the Services and USD(AT&L) with promises of system solutions seemingly effective for all their problems. Senior

Figure 1. JCGV Governance Board Members

TACOM Deputy Commanding General (Chair)
TACOM Life Cycle Management Command

TARDEC
Tank Automative Research Development Engineering Center

MCSC
Marine Corps System Command

ONR
Office of Naval Research

JCGV Governance Board
(Cooperative Management Model)

The decision-making structure is peer management a k a cooperative management. All responsibility is shared, and there is no one single authority. Decision making is by consensus and no individual has power over another.

PEO CS & CSS
Program Executive Office Combat Support & Combat Service Support

PEO GCS
Program Executive Office Ground Combat Systems

PEO LS
Program Executive Office Land Systems (Marine Corps)

Technical Support
• Align technical resources in support of programs
• Inform and support technical issues
• Focused S&T initiatives

TARDEC • MCSC • ONR

Acquisition Management
• Set demand signal for ground programs
—focus technical community
—prioritze programmatic needs
• Discuss ground vehicle portfolio issues
• Seek efficiencies across programs
—collaborate, share lessons learned

PEO CS & CSS • PEO GCS • PEO LS

> **The JCGV does not exist in a physical building or change any existing authorities, but accomplishes its mission through open centralized collaborative governance, integrated planning and portfolio management, systems integration, technical expertise, and resource and data sharing.**

a model has great potential if properly employed and utilized at the USD(AT&L) level.

The JCGV can take ground vehicle development and acquisition to a whole new level. This will require senior-level buy-in and use of the Governance Board beyond how it now is used to run the JCGV. The JCGV's efforts ensure the member organizations function as an enterprise, looking at commonality across platforms and Services and developing shared analytical services in systems engineering processes that result in more efficient and effective vehicle acquisition programs. The science and technology programs between the Army and Marine Corps relative to ground vehicles never have been closer and more coordinated as a result of the JCGV-fostered collaboration. One JCGV initiative seeks a common C4ISR architecture. Other JCGV intiatives include establishing common mobility requirements, common survivability testing standards, developing an operational energy evaluation and metrics definition, and documenting Modeling and Simulation tool sets/best practices.

Support of BBP 2.0 and Portfolio Management

The JCGV addresses the fundamental principles outlined in the BBP 2.0 Implementation Directive dated April 2, 2013. The Governance Board established under the JCGV is doing a lot of "thinking" by bringing together the three ground vehicle PEOs between the Army and the Marine Corps and the technology leaders who support them, chaired by the TACOM LCMC. Together, they increase the professional judgment collectively across the joint ground vehicle domain. The Governance Board is focused on its workforce, our "people." We are forecasting the critical skill demands required in support of ground vehicle development to make sure the government maintains those skills needed for developing successful programs. The JCGV was built around "the basics" of what must be done to succeed, with an emphasis on our people, processes, organizations, and tools. We are able to "streamline" cross-cutting/cross-Service "decisions" via the Governance Board.

The details of how the JCGV addresses or could address many of the seven areas of BBP 2.0 can be the subject of another article. My contention is that, if the model that the JCGV represents is embraced by our Service leaders, department heads, and Congress, we could achieve much greater efficiencies and savings at the department level. From a portfolio perspective, each PEO in and of itself represents a portfolio. By grouping other "like" or related PEOs together as the JCGV has done, the building blocks would be assembled for portfolio management at the departmental, cross-Service level. We just need to work through the Service-level issues that impede or slow direct collaboration between the PEOs and USD(AT&L). This is recommended not to circumvent Service leadership, or trump Service positions, but rather to provide the USD(AT&L) with the most relevant and timely SME information to aid sound DoD decision making.

leaders expended a great many resources chasing these new "shiny objects" to no avail. The JCGV Governance Board could have been tasked to provide subject matter expert (SME) opinion and informational papers or reports that could have quickly contained these excursions with accurate data. There are many reasons industry goes around the technical community and acquisition chain straight to the top, the least of them an attempt to circumvent competition or accelerate the process. Our senior leaders need to prevent that and to trust their internal experts to better inform them of the true value and cost of what industry has presented. The JCGV Governance Board has access to and represents the ground vehicle domain SMEs in their entirety and should be used appropriately as a sanity check by senior leaders who are approached by industry with proposed solutions.

Creating a Culture of Stewardship

The JCGV's quarterly Governance Board meetings, use of best practices, common tools and processes, continuous improvement to drive out inefficiencies, together with continued efforts to ensure a trained and ready workforce all add up to creating a culture of stewardship embodied in the recently released BBP 2.0. I don't want to overstate our actual progress with the JCGV effort. We still have much work to do. But such

The author can be reached at **Daniel.Pierson@usmc.mil**.

Performance-Based Logistics

Only Part of the Answer to Controlling Costs While Improving DoD Performance

Steven Hurt ■ *Alan Heckler*

n order to make real measurable changes in Operations and Support (O&S) costs, more is needed than point solutions such as Performance-Based Logistics (PBLs). The Department of Defense (DoD) must take a step back to structurally address how it designs support concepts for all weapon systems by looking to Principle Driven Sustainment Models and Portfolio Management concepts from the commercial world to realize true step-change improvement and meet today's budget realities.

For the better part of the past decade, PBLs have been the preferred support concept of the DoD. PBLs with their promise of improving performance while simultaneously reducing costs and shifting risk to the contractors were seen as solving the magical trifecta required to address the always looming problem of rising O&S costs. However, even today, PBLs remain a hotly contested topic with strong supporters and foes in both government and industry.

Most of the disagreement centers on answers to two main questions: (1) do PBLs in fact deliver improved performance at a reasonable cost; and (2) without cost transparency, is the government getting a fair deal? There certainly is a wide body of evidence to credibly argue both sides of

Hurt *is a partner and* **Heckler** *is a principal in A.T. Kearney's Public Sector and Defense Practice, Dallas-Fort Worth, Tex.*

these questions. However—given the findings from recent DoD-sponsored studies (i.e., Project Proof Point), the acknowledgment that effective Service-level contracting occurs regularly in the commercial world, and that the move from a transaction-focused to an incentivize-focused outcome makes intuitive sense—it is fair to accept that well-written PBLs do in fact deliver on their promises. Our work across the DoD has shown firsthand the good and the bad, the successes and the failures of PBLs. And while there are numerous lessons to be shared, our main takeaway is that PBLs alone simply will not cure what ails the DoD.

Today, within the constraints defined by the Services, each program makes its own decisions about whether government or contractor resources will be responsible for its maintenance and how it will be executed. With this approach, each program manager (PM) must navigate political, technical, legal, and

PDSMs are defined as a limited number of business models for PMs to select from that embody an optimized DoD Enterprise support strategy. By limiting the number of sustainment business models and providing sufficient variation across the menu to meet unique user requirements, the DoD can emulate strategies executed by large commercial organizations to tame complexity and optimize performance. First principles are used to avoid the whims of changing political, operational and budgetary environments and therefore provide stability across the life of the program. Further, we recognize that the DoD Enterprise must be optimized across both the government and commercial industrial base. A system that is commercial off-the-shelf technology, with a limited life cycle (First Principles) is probably best maintained by the commercial industrial base, while a highly engineered, military specific product, long life-cycle weapon system probably is best maintained with a government-led, partnered team.

> Today's "every program for itself" management philosophy is simply too expensive in austere times.

operational challenges to arrive at a program-optimized strategy that may or may not align to enterprise-level objectives.

Typically, decision making is done inside program silos without consideration of potential leverage points across multiple programs. Numerous examples can be listed of similar platforms—including aircraft, ships, trucks, and other weapon-systems—evolving to completely unique end-states. A great example of this is supply-chain management across the fighter aircraft fleet. Currently, government-led supply-chain management is performed for the F-16, while the prime contractor runs the supply chain for the F-22 and a third, completely different prime-run supply chain is planned for the F-35. In each case, the same prime contractor is involved. Provided the similarities in these programs, this obviously is a suboptimal strategy for the Air Force enterprise as a whole that results in excessive costs in multiple IT systems, warehousing, supply chain managers, shipping costs, and other management expenses.

Many Fortune 500 companies recognized and solved this same problem in their businesses over the past two decades by adopting Principle-Driven Sustainment Models (PDSMs).

Adoption of PDSMs across the DoD would result in significant cost savings by reducing redundancy, providing consistent, clear direction to industry and government about what is expected and needed from each, empowering both to pursue and ultimately achieve truly world-class performance, and enabling true, long-term strategic sustainment planning earlier in the acquisition life cycle.

The second complementary action, Portfolio Management, seeks to align across products, processes, systems, and subsystems to identify points of commonality, economies of scale, and leverage to define a management approach that takes advantage of untapped synergies. Today's "every program for itself" management philosophy is simply too expensive in austere times.

One of the many lessons the auto industry had to learn in the 1980s and '90s was how to adopt Portfolio Management concepts to vehicle design, production, and servicing. Prior to that time, every car team did its own thing. Today commonality, reuse, and waste elimination are second nature. Unfortunately, when it comes to program management, the

DoD still is largely in the '90s where every program determines its own destiny. Sure, program executive officers (PEOs) and their staffs are in place to serve as the single points of accountability and ideally standardize across programs where possible. But real barriers (e.g., security, funding limitations, chains of command, to name but a few) exist to doing this on an effective commercial scale. In our view, these barriers can be overcome by the existing, compelling business case.

Portfolios can be defined in a number of ways. For example, the DoD could think of a portfolio as similar programs and products, such as all wheeled and tracked vehicles. This portfolio could better leverage the depot network infrastructure for reset and modernization, thus improving utilization of the depots and contractor facilities, reducing redundancies, and significantly reducing costs. Another way to define portfolios is by prime contractors. Were the largest primes able to manage their programs as portfolios rather than individual programs, costs could be saved through overhead cuts, technology and process leverage across programs, contracting, and other sources. Finally, defining portfolios by subsystems, such as ship air-conditioning units, could result in significant cost savings. Focusing initial development and modernization around a standard set of air-conditioning units could produce savings through purchasing and engineering economies of scale, maintenance training, inventory and supply chain management, and ongoing subsystem maintenance.

In terms of an analogy, it helps to think of a football team. Imagine DoD programs as the "players," PBLs being the "personal trainers" to drive the best results for the individual players, PDSMs as being the "playbook" on how to manage the game, and Portfolio Management being the "coach" that seeks to optimize performance across all players by achieving more than the sum of the parts. While well-written PBLs may optimize the individual players, you need to have a strong playbook and coach to win. Just like football, the government and commercial team need to work together to win.

PBLs have had plenty of time to prove (or disprove) themselves. And while the facts suggest that, when done right, they can help an individual program, the lack of widespread adoption (fewer than 90 active across DoD) and decisiveness of the topic itself point to more being needed. Success in business often is about knowing when to lead and when to be a fast follower. In the case of driving down O&S costs, it is time for the DoD to be a fast follower and implement new structural changes. &

The authors can be contacted at **steven.hurt@atkearney.com** and **alan.heckler@atkearney.com**.

Acquisition Reform

How Training Can Help

Ronald G. Joseph, DBA

With an ever-growing national debt and more than $17 trillion in unfunded liabilities, the Department of Defense is, yet again, focused on acquisition reform as a way to achieve new efficiencies and savings. Acquisition reform efforts certainly are not new. A recent study revealed that more than 260 pertinent studies, commissions, and papers have been written over the last 20 years, including the highly regarded Defense Acquisition Performance Assessment (DAPA) of 2005.

Joseph *is a professor of program management at DAU and a retired USAF colonel whose 28-year career includes serving as a fighter pilot, experimental test pilot, and MDAP program manager.*

Although DAPA and other major efforts such as the Packard Report (1986) and the Fitzhugh Commission (1970) have led to improvements in the acquisition process, many of the key reforms mentioned throughout the decades have not been implemented. The reasons for this are varied and complex, but there are some internal things that DoD can do to improve the acquisition process.

Train As You Work: Integrate Government and Contractors in Capstone Classes

Our current acquisition leaders have recognized that government program managers (PMs) have only a limited understanding of commercial business processes, which also limits their ability to motivate industry teammates to negotiate smart win-win solutions. Contractor PMs are equally deficient in understanding government processes. I recently attended a weeklong corporate senior PM training session, and during the entire week I heard only one government term— Milestone C. Further investigation revealed that contractor PMs did not understand the differences between different "colors of money" and how their future cash flows might be affected if government PMs failed to properly manage color-of-money issues. This raises the question of how we operate as an effective government-contractor team on billion-dollar programs when we still speak two different languages.

Encourge Government, Contractor Training in DAU's Program Manager Course (PMT 401)

The government already has the infrastructure to integrate senior government and contractor program management training. All government PMs are required to attend PMT 401 prior to leading a major defense acquisition program (MDAP). PMT 401 is a 10-week course focused on improving acquisition outcomes through improved analytical skills, critical thinking, and decision making. Although some industry PMs attend PMT 401, the numbers currently are too low to be effective.

Some industry executives balk at the idea of paying 10 weeks of overhead for their PMs to attend; but, with billion-dollar contracts on the line, this objection seems shortsighted. DAU has data indicating that both government and contractor PMs gain a better understanding of the other's system during the course. Contractors who have attended PMT 401 also have indicated there were many other tangible benefits. For example, one defense contractor vice president stated that PMT 401 was one of few opportunities contractors had to engage meaningfully with the next generation of government PMs outside formal, contractual meetings. This helps build long-term trust.

The importance of having trust relationships in the work environment has been well documented by research. Anecdotally, we know this to be true as we give more latitude to subordinates whom we trust more. Unfortunately, in acquisition, a lack of trust can lead to broken negotiations and eventually to cost overruns and schedule delays. In an example of how

the system should work, both the incoming government and contractor PMs of the B-2 system attended the same course. During the course, they developed a strong trust relationship that helped them solve very complicated problems from a win-win perspective. Asked why he was so successful, the government PM pointed to the trust relationship he developed with his contractor in PMT 401.

Developing trust and understanding between government and contractor PMs is so important that DoD should give some consideration to mandating contractor attendance via key personnel clauses or as terms of contract award such as ISO 9000 or Capability Maturity Model Integration (CMMI) levels for software development. Mandating attendance contractually requires the government to pay for some or all of the costs of attendance. But paying for contractor attendance is relatively a small concern when one considers there are only about 100 MDAPs in DoD at any one time. In addition to the limited numbers of contractor PMs requiring PMT 401 level training, contractor PMs rotate less frequently than their government counterparts, further reducing the long-term cost of their training.

Mandate DAU Executive Coaching for All New ACAT I PMs

Why mandate executive coaching? The answer to this question begins with understanding the complexity of the acquisition process and the nature of hierarchical organizations like DoD. Research into hierarchical organizations indicates that responsibility increases as a manager moves up in the organization; and at the point of transition to executive responsibilities that increase becomes nonlinear. My own research related to responsibilities in a complex acquisition organization revealed that the point of non-linearity, which I call the Joseph-point, generally happens at the colonel/GS-15 major PM level. For example, for a lieutenant colonel, typical responsibilities include having as many as 50 employees, modest budget responsibility, and interfaces with colonels and perhaps a one-star PEO. As a colonel, an ACAT I PM may be responsible for an organization of 200 or more persons, millions to billions of dollars in contracts, and routinely interface with generals and senior executive civilians—a very large increase in responsibilities.

Civilian research indicates that this large jump in responsibility for new executives requires an adjustment period of 6 to 12 months. In this transition period, the organization may suffer as these executives struggle to make this metamorphosis. The corporate world has long acknowledged this lag and invests more than $50 billion annually in executive training, including executive coaching, according to the American Society of Training and Development Annual Report 2012.

Since DoD PMs are not immune to the detrimental effects of the Joseph-point, it makes sense to team PMs with experienced executive coaches during this period. Executive coaches function as thinking partners who help PMs develop

strategic critical thinking and executive-level decision-making skills. Executive coaches do not provide answers or make decisions for the PM but, as thinking partners, challenge the framing assumptions and depth of detail to ensure that the PM's plan develops in a way that provides the highest probability of success.

But how successful is executive coaching? In *The Coaching Impact Study: Measuring the Value of Executive Coaching*, Barry Schlosser, Derek Steinbrenner, and James Hunt indicated that executive coaching can have a very high return on investment or value creation if two factors are present. First, the executive coaches must work with decision makers who have the power and influence to affect the organization. And second, the program must focus on organizational goals and outcomes vs. individual skill development. These two factors are at the core of DAU's executive coaching program, which has been rated very favorably by participating PMs.

Regrowing a Capable Acquisition Workforce

We still suffer from the results of the drawdown of the acquisition workforce in the mid-1990s and a shift of much of the program leadership responsibility from government to industry. That experiment did not work, and, thanks to recent actions by the Office of the Secretary of Defense and Congress to revitalize the government workforce, we slowly are recovering. However, as we reassume program leadership, we have thrust many young and inexperienced employees into positions of substantial responsibility, without adequate on-the-job training and mentoring. Our industry counterparts have noticed the issues and impacts on them. For example, I recently spoke with several defense contractors who felt that their government counterparts were getting younger and lacked experience. They cited this as the cause of declining quality of government requests for proposals (RFPs), with one contractor noting that in some cases government teams merely cut and pasted content from one program RFP to the next.

From my vantage point, the first step to solving a declining experience problem is to acknowledge that it exists and decide what to do about it. Given the dearth of mid-level managers to provide on-the-job help and mentoring, the workforce must seek other solutions. In the past, there has been an overreliance on support contractors. Another, perhaps better, solution is to seek help from experienced government faculty at DAU. The university can provide help and mission assistance directly to program offices, including consulting,
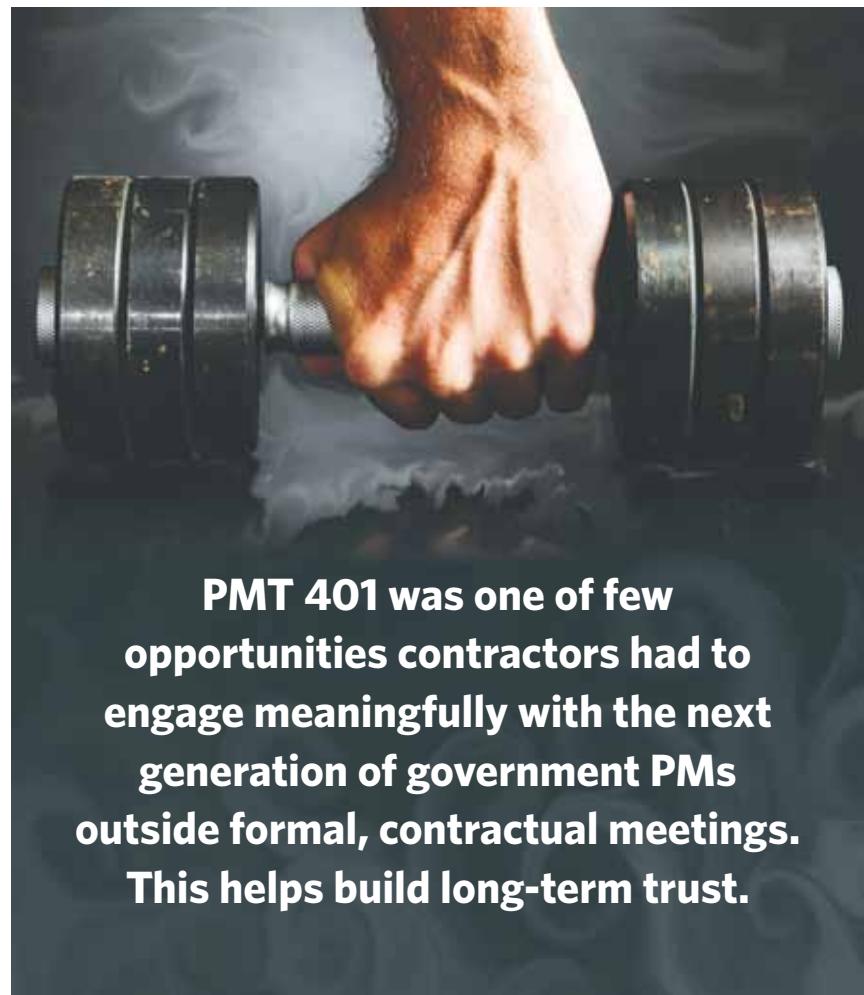
PMT 401 was one of few opportunities contractors had to engage meaningfully with the next generation of government PMs outside formal, contractual meetings. This helps build long-term trust.

program and portfolio reviews, targeted and tailored training, and a host of other tools and services that can be used by program offices to solve immediate problems and mentor the workforce.

Conclusion

In a time of declining resources, training and mentoring can be key factors in ensuring effective acquisition outcomes. Providing capstone program management training, like PMT 401, to both contractors and government can help facilitate forming a common foundation for knowledge and understanding for senior program management teams. Providing executive coaching to newly selected senior PMs can help them quickly grow beyond the Joseph-point. And DAU can help programs with inexperienced individuals in key positions through specially designed workshops, targeted training, consulting services, and executive coaching. Coming budget drawdowns will create an austere environment requiring the government and defense contractor workforce to be innovative, smart, and open to asking for help to hone its training and skills. DAU is well positioned and willing to help ensure better acquisition outcomes to support our warfighters. 🖐

Serve as You Lead

Art Greenlee

The distinctions between managers and leaders always will be with us—managers do things right, and leaders do the right things.

Managers effectively and efficiently apply the functions of management—planning, organizing, staffing, and controlling—as they use allocated resources to get the job done. Leaders, on the other hand, are the point people in any organization, and they lead by example.

For the purposes of this article, *servant leaders* offer themselves, their program, or their enterprise as they develop and serve their people. Simply put, managers primarily plan, organize, staff, and control; and servant leaders primarily motivate, influence, and inspire. Servant leaders motivate through their direction and support. They influence through their example, and they inspire through their passion.

Leaders, like managers, apply resources, but the important distinction up front is that servant leaders have the ability to use the mission, the "cause," to build their people. Managers use resources/people to fullfill goals. Servant leaders use their projects/programs or organization to develop and build their people. Traditional leadership models describe leaders as those who set the course, provide the vision, and are the examples for others to follow. Both

Greenlee *is a professor of Program Management in the Capital and Northeast Region of Defense Acquisition University at Fort Belvoir, Va.*

traditional and servant leadership models can yield success if correctly applied. The author also would contend that one first must understand and perform successfully as a manager before becoming a trusted, servant leader.

This article focuses on the three leadership attributes—motivation, influence, and inspiration—with the intent that all workforce members may see they have the potential to serve as they lead, wherever they are in the program or enterprise. This article's purpose is not to minimize managers. Yet the higher virtue is that of a servant leader who uses the three leadership attributes to best serve (develop and build) others.

Serve as You Motivate
Motivation is giving someone a good reason for doing something and causing them to take action. However, leaders must motivate themselves first. They need to first convince themselves that what they are doing, where they are going, and what they are trying to accomplish are the absolute best for the people they serve and will in the end achieve the most success. At the same time, they need to remind themselves up front and often with thoughts such as, "This is not about me," "I am in a cause," "This is really a great idea," and "What can I do to best serve those I'm leading?" These often-needed reminders can fuel their own motivation first before they motivate others.

Leaders motivate through the *direction* they give and *support* they provide. The direction could come in the form of an idea, a strategy, guidance needed to accomplish a task, or reminders of what is right and best to do. The direction a leader provides needs to be clear, sincere, and inspiring. No one likes to read long vision or mission statements that do little to motivate or inspire. Rather, one is motivated to take action when hearing compelling statements by leaders, such as President Kennedy's "Ask not what your country can do for you—ask what you can do for your country" or President George H.W. Bush's declaration to Saddam Hussein to be out of Kuwait by Jan. 15, 1991.

Direction also is giving guidance that produces success over time. Leaders continually give guidance so there is a clear understanding of what is required and how to consistently think and act to achieve the standard, thus enabling success. S. Truett Cathy, founder and CEO of Chick-fil-A, posts his famous quotation in each one of his restaurants to set the standard: "Food is Essential to life; therefore, make it good." I think we all would agree that adherence to this motto in service and food may well have been the key to the success of Chick-fil-A.

Steven Covey describes the importance of giving clear guidance to his teenage son that proved successful in maintaining their lawn: "Keep it green and clean."

Servant leaders then motivate themselves and others through their committed *support*. Support from top management is a wonderful thing. Lack of support is misery. A servant leader's goal is to support people with continual encouragement and guidance, and then watch them bloom. Authentic support comes through one's thoughts, words, and actions. That you care for the improvement and success of those you serve is shown by your encouragement that they stay with it, keep plugging away, and keep making progress. Your genuine, sincere support not only is noticed but contagious.

Then, actions speak the loudest. Leaders' continued acts of support, demonstrated by their competence, caring, and cooperation, motivate others to want to make their own contributions. Genuine support is found in this simple, yet profound, reminder to all leaders at all levels—do not use people to build a project, program, or enterprise but rather use the project, program, or enterprise to build people. Servant leaders remember that enduring, mutually supportive relationships are what life is all about. Building people over building a business, program, etc., is the best and right thing to do. Direction comes from the head. Supportive, servant leadership comes from the heart. Both motivate the leader and those being led. Those under this type of leadership are more secure as they know the leader has their back and genuinely is there to support them.

Serve as You Influence
Webster defines "influence" as possessing "the power to change or affect someone or something in an important way … without directly forcing them to make it happen." Both managers and leaders have influence. The influence of managers is seen and felt through the management of resources they set in motion and implement to accomplish goals. The influence of leaders is seen and felt in the lives they affect. Leaders make a difference by their character and example. Character is both learned over time and demonstrated through consistent actions. Leaders influence others by repeatedly setting the example.

As a young officer, I will never forget the 2- to 3-minute character lesson I received from then Brig. Gen. Ronald Yates, the F-16 program director, when he described his work ethic and importance of "putting in the time," even if it meant coming in on weekends for the sake of the program and his people. That brief but vital lesson hit home with me as he routinely demonstrated this quality, thus enabling the success of others over himself. His aspiring to become a four-star general is no surprise; he practiced what he preached, ultimately influencing many under his leadership.

A leader's character also is demonstrated in the hard times. Many a leader weathers the storm of adversity knowing what he or she is doing is right even if it does not feel good; all is not going well, or "the end" is not in sight. Abraham Lincoln, in a famous passage found in one of his original manuscripts, gives us a glimpse of a leader's influence during the Civil War when he wrote "I expect to maintain this contest *until* successful, or till I die, or am conquered, or my term expires, or Congress or the country forsakes me." According to textual

evidence, Lincoln added the words "until successful, or," drastically altering the meaning of the passage. Yet, through this writing, one gets a glimpse of our 16th president's grim determination and allowance of optimism. Lincoln used writing to communicate his purpose and resolve during a time of profound conflict.

Leaders also do what they do even though they may not understand fully all the impacts or details of their ideas. They realize, though, that there is a greater opportunity and an ultimate benefit for the people they are serving. Fred Smith, founder and CEO of Federal Express, communicates this uncertainty yet conviction of remaining steadfast and enduring in his vision of a national express delivery system in the following quotes from his book "Learning to Lead—How to Bring Out the Best in People" (1986) on FedEx's creation:

> But once having started it [FedEx] and gone down the road, you're a bit crazy and you're driven towards the end goal and that provides a lot of adrenaline. ... Well, I think an entrepreneur has to have the ability to see things other people don't, that can view what might be rather than what is. ... And then I think secondarily what's required is enormous conviction and commitment to take the concept or idea and bring it to fulfillment.

Mr. Smith's vision and unwavering desire to "bring it to fulfillment" have led to FedEx's success in the global marketplace.

Serve as You Inspire

Webster defines inspiration as "the action or power of moving the intellect or emotions." To inspire is to draw in, to heighten, or to intensify. Servant leaders inspire others to want to do or create something. They inspire others through their passion, through having a strong feeling or emotion, rooted in their convictions. Passion starts from within and is caught in one's words and actions. As leaders communicate, one senses their deep-rooted beliefs and passions. Their thoughts, ideas, or plans become more believable. When servant leaders demonstrate this inspiring intensity of their convictions, they produce a feeling or emotion in the followers to come along, to engage, to buy in. Followers sense the drive and then observe over time the authenticity behind the communication. Their true passion creates a synergy in followers—more things get done and with greater enthusiasm.

These passionate servant leaders also never quit in their efforts to build something, to make something happen. Quitting is not in their vocabularies, and that drive and might move others to make it a part of their lives also. One passionate leader of a university told everyone entering the freshmen class to go to the dorms and cut the word "quit" out of the dictionary. To this day, all dictionaries at that institution have "quit" cut out.

The servant leaders' direction, support, character, and continued example, combined with a true passion for building and developing others, inspire those they serve to get in step.

A leader's passion is what inspires followers to go beyond what they think they can do. Genuine passion also produces the response in followers to step up their own passion for the things they too hold dear. When this is accomplished, servant leaders fulfill their true calling—they have used their program or enterprise to build and develop their people.

A Classic Example in the Workforce

Col. Bruce Mills, former program manager of the E-8 Joint Surveillance Target Attack Radar System (JSTARS) program, uniquely demonstrated these qualities of being a servant leader. In preparation for the program's low-rate production decision, Col. Mills declared "War on the DAB" (Defense Acquisition Board). To instill the vision, he mobilized his entire program—camouflaging the program office, streaming netting in the halls, stairwells, and offices. And he encouraged military folks and civilians, who purchased them, to wear their Battle Dress Uniforms daily and even to meetings with the contractors. He also displayed JSTARS ground and aircrew mock-ups in the program office; and at "All Hands" and staff meetings communicated creative analogies to war. The genre and urgency of the need created a work environment for success. Team efforts were synergized efficiently, and the entire program office prepared and performed beyond its previous expectations. His creative vision, sacrificial commitment, example, and passion all were vital in helping his people and the program successfully make it to production ... and win the war! The warfighters can be thankful an acquisition leader was as passionate about acquiring the capability they have needed on a daily basis!

Conclusion

The purpose of this article is *not* to discuss leadership over management. Rather, the article is meant to remind us all as acquisition professionals what separates a leader from a manager. One can be both. One needs to be both. We need efficient and effective managers of cost, schedule, and performance commensurate with program risk. However, as acquisition professionals, we need to keep in mind when it is appropriate to manage and when it is appropriate to lead, no matter where we are in the program or organization. As acquisition leaders, we need always to remember we are helping develop those we can influence, by our example in word and deed. Servant leaders realize it is not about them; it is about serving people through themselves and their program/enterprise. No one is to be minimized. Through their direction, challenging ideas, support, character, attitude, and passion, leaders motivate, influence, and inspire all to give their best and then serve others as well. These leaders make the difference in our lives and in our programs. In the day-to-day management of acquisition programs, the author's intent was to help readers remember qualities and actions that best serve others, highlighting this as a leader's greatest calling. Remember, too, at the end of the day, it's people we are ultimately serving.

The author can be contacted at **Arthur.Greenlee@dau.mil**.

Defense AT&L

W r i t e r s ' G u i d e l i n e s i n B r i e f

Purpose
Defense AT&L is a bimonthly magazine published by DAU Press, Defense Acquisition University, for senior military personnel, civilians, defense contractors, and defense industry professionals in program management and the acquisition, technology, and logistics workforce.

Submission Procedures
Submit articles by e-mail to datl@dau.mil. Submissions must include each author's name, mailing address, office phone number, e-mail address, and brief biographical statement. Each must also be accompanied by a copyright release.

Receipt of your submission will be acknowledged in 5 working days. You will be notified of our publication decision in 2 to 3 weeks. All decisions are final.

Deadlines
Note: If the magazine fills up before the author deadline, submissions are considered for the following issue.

Issue	Author Deadline
January–February	1 October
March–April	1 December
May–June	1 February
July–August	1 April
September–October	1 June
November–December	1 August

Audience
Defense AT&L readers are mainly acquisition professionals serving in career positions covered by the Defense Acquisition Workforce Improvement Act (DAWIA) or industry equivalent.

Style
Defense AT&L prints feature stories focusing on real people and events. The magazine seeks articles that reflect author experiences in and thoughts about acquisition rather than pages of researched information. Articles should discuss the individual's experience with problems and solutions in acquisition, contracting, logistics, or program management, or with emerging trends.

The magazine does not print academic papers; fact sheets; technical papers; white papers; or articles with footnotes, endnotes, or references. Manuscripts meeting any of those criteria are more suitable for DAU's journal, *Defense Acquisition Research Journal (ARJ)*.

Defense AT&L does not reprint from other publications. Please do not submit manuscripts that have appeared elsewhere. *Defense AT&L* does not publish endorsements of products for sale.

Length
Articles should be 1,500–2,500 words.

Format
Send submissions via e-mail as Microsoft Word attachments.

Graphics
Do not embed photographs or charts in the manuscript. Digital files of photos or graphics should be sent as e-mail attachments. **Each figure or chart must be saved as a separate file in the original software format in which it was created.**

TIF or JPEG files must have a resolution of 300 pixels per inch; enhanced resolutions are not acceptable; and images downloaded from the Web are not of adequate quality for reproduction. Detailed tables and charts are not accepted for publication because they will be illegible when reduced to fit at most one-third of a magazine page.

Non-DoD photos and graphics are printed only with written permission from the source. It is the author's responsibility to obtain and submit permission with the article. **Do not include any classified information.**

Author Information
Contact and biographical information will be included with each article selected for publication. Please include the following information with your submission: name, position title, department, institution, address, phone number, and e-mail address. Also, please supply a short biographical statement, not to exceed 25 words. We do not print author bio photographs.

Copyright
All articles require a signed Work of the U.S. Government/Copyright Release form, available at http://www.dau.mil/pubscats/pages/defenseatl.aspx. Fill out, sign, scan, and e-mail it to datl@dau.mil or fax it to 703-805-2917, Attn: Defense AT&L.

Alternatively, you may submit a written release from the major command (normally the public affairs office) indicating the author is releasing the article to *Defense AT&L* for publication without restriction.

The Defense Acquisition University does not accept copyrighted material for publication in *Defense AT&L*. Articles will be considered only if they are unrestricted. This is in keeping with the University's policy that our publications be fully accessible to the public without restriction. All articles are in the public domain and posted to the University's website, www.dau.mil.